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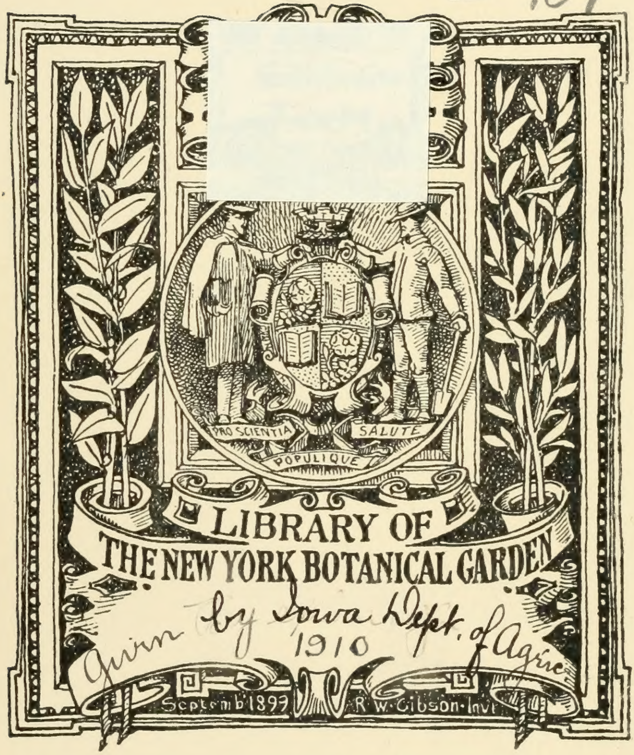
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TENTH ANNUAL

Iowa Year Book of Agriculture

Issued by the

Iowa Department of Agriculture

1909

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LETTER OF TRANSMITTAL.

OFFICE OF IOWA STATE DEPARTMENT OF AGRICULTURE,
Des Moines, Iowa, February 12, 1910.

To His Excellency, B. F. Carroll, Governor of Iowa:

SIR:—*I have the honor to transmit herewith the Tenth Annual* IOWA YEAR BOOK OF AGRICULTURE, for the year 1909.

JOHN C. SIMPSON,
Secretary State Board of Agriculture.

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1909

INTRODUCTORY.

In compiling the Tenth Annual Iowa Year Book of Agriculture it has been the purpose of the Department to present in an intelligent manner information most sought for by students of agriculture and those seeking information looking toward the betterment of agricultural conditions in the State of Iowa.

The usefulness of the Department in disseminating information is greatly impaired for the reason that the law governing the Department makes no provision for the publishing of any information through any other medium except the Iowa Year Book of Agriculture. We believe that some change should be made in the law whereby the Department would have the means and authority to publish bulletins, and not be obliged to withhold valuable information from the public until such time as it may be published in the Year Book.

The Year Book for 1909 is divided into fifteen parts. Preceding Part I is a compilation of crop and other farm statistics showing Iowa's source of wealth. Part I contains the final summary of the Iowa Weather and Crop Service for the year 1909. In this part will be found the monthly review of the climatology for the year, the dates of last killing frost in spring and first in autumn, climate and crop review for the year, comparative data of temperature and precipitation, and the final estimate on the acreage and yield of the principal farm crops in each county and for the state. Part II contains statistical tables of Iowa's principal farm crops for the years of 1896 to 1909 inclusive, acreage, production and value of the principal farm crops of the United States in 1909, statistics of the principal farm crops of the world for the years 1904 to 1909 inclusive, and the estimated number, average price, and total value of farm animals in the United States January 1, 1910, with comparisons. Part III contains crop and other farm statistics gathered by the township assessors and reported to this Department by the county auditor of each county in the state. This is the first report under the provisions of Chapter 86, Acts of the Thir-

MAY 23 1911

ty-third General Assembly and contains the following data: Table No. 1. Total number, average size, and total acreage of all farms within the state, number of rods of tiling, number of silos, number of manure spreaders in use, and the average monthly wage paid farm help. Table No. 2. Total acreage, total yield and average yield per acre of the following farm crops for the year 1909: Corn, oats, barley, winter and spring wheat. Table No. 3. Acreage, yield and average yield per acre of rye, potatoes, alfalfa and hay, also number of bushels of timothy and clover seed, number of acres of pop corn, acres and yield of sweet corn, number of acres in garden and orchards, and the acreage alloted to pasture, all for the year 1909. Table No. 4. Number of horses, mules and cattle (all ages) on the farms in Iowa January 1, 1910; the number of cattle shipped in for feeding during the year and the number sold for slaughter during the same period, the average number of hogs and sheep kept on the farm, the number of sheep shipped in for feeding and the number sold for slaughter, the average number of poultry kept on the farm, the number marketed during the year, the approximate number of dozens of eggs received and the approximate number of dozens sold during the year. Part IV contains a report of the proceedings of the joint session of the Annual State Farmers' Institute and Corn Belt Meat Producers' Association on December 7, 1909. Part V contains the proceedings of the State Agricultural Convention, December 8, 1909. Part VI gives a synopsis of the proceedings of the State Board of Agriculture, executive and special committee meetings. Part VII contains a complete report of the proceedings of the annual meeting of the Swine Breeders' Association for 1909. Part VIII sets forth the proceedings of the Thirty-third Annual Convention of the Iowa State Dairy Association held at Cedar Rapids November 16, 17 and 18, 1909. Part IX is a reprint of the State Food and Dairy Commissioner's Tweny-third Annual Report, same being for the year 1909. Part X contains reprints from bulletins from various experiment stations and other valuable data from the agricultural press and from papers read before county farmers' institutes on agriculture and kindred subjects, and a financial statement of county farmers' institutes in Iowa receiving state aid. Part XI is a report of the Iowa State Fair and Exposition by the leading agricultural papers of this and adjoining states, with the official report of awards in the live stock departments for the 1909 fair and the scoring in the boys' judging and the girl's cooking contests. Part XII gives a report of the agricultural conditions in the state by the county and district agricultural societies in Iowa; also a financial statement of county and district fairs in Iowa receiving state aid and a statement showing admission fees charged at these fairs. Part XIII is a report of the horse breeding industry in Iowa with a list of state certificates issued from May 1, 1909, to May 1, 1910; also a copy of the law governing the state enrollment of stallions and the lien law for service fee, with recommendations for changes in these laws. Part XIV gives a copy of the concentrated feed and seed laws. Part XV is a directory of associations and organizations representing agricultural interests in Iowa.

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1910

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President of Iowa State College	Ames
State Dairy Commissioner	Des Moines
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The President, Vice-President, Secretary and Treasurer are elected for one Year.

Terms of the Directors for even-numbered Districts expire Second Wednesday in December, 1910. Terms of Directors from odd-numbered Districts expire second Wednesday in December, 1911.

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YEAR 1910

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IOWA WEATHER AND CROP SERVICE.

GEO. M. CHAPPEL, Director...............................Des Moines

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IOWA'S SOURCE OF WEALTH

FOR THE YEAR ENDING DECEMBER 31, 1909.

COMPILED FOR THE IOWA YEAR BOOK OF AGRICULTURE,
FROM STATISTICS GATHERED UNDER THE NEW
IOWA SATISTICAL LAW.

ACREAGE PRODUCTION, AVERAGE YIELD AND VALUE PER ACRE AND TOTAL VALUE OF IOWA FARM PRODUCTS FOR THE YEAR 1909.

Farm Products	Acreage	Production	Average yield per acre	Average farm price Dec. 1, 1909	Value per acre	Total Value
Corn	8,681,850	308,036,868	34.6	$ .51	$17.65	$157,098,802
Oats	4,312,134	[illegible]	27.	.35	8.45	40,979,347
Winter wheat	189,970	3,621,953	18.2	.92	16.75	3,332,197
Spring wheat	[illegible]	3,900,460	12.5	.90	11.25	3,420,414
Barley	562,622	10,352,040	17.5	.46	[illegible]	4,761,938
Rye	[illegible]	556,846	13.4	[illegible]	8.04	334,107
Potatoes	138,139	12,427,595	90.	.53	47.70	6,586,614
Flax	17,365	173,653	10.	1.30	13.00	225,745
Hay	4,333,983	6,311,874	1.4	7.00	9.80	44,183,118
Alfalfa	23,041	65,806	2.85	8.00	22.80	526,448
Miscellaneous crops	952,440				15.00	14,286,600
Timothy seed		1,067,538		1.50		1,601,307
Clover seed		41,598		8.00		332,784
Pop corn (acres)	[illegible]				[illegible]	443,400
Sweet corn (acres)	14,083				50.00	704,150
Garden (acres)	44,874				100.00	4,487,400
Orchards (acres)	151,199				75.00	11,339,925
Pasture (acres)	9,466,798				10.00	94,667,980
Acerage utilized in buildings & lots	[illegible]					
Wool						1,000,000
Dairy						50,000,000
Poultry and eggs						25,858,573
Total	30,221,356					$466,170,849

NUMBER, AVERAGE VALUE AND TOTAL VALUE OF LIVE STOCK. JANUARY 1, 1910.

	Number all Ages	Average value	Total value
Horses	1,322,464	$115.00	$152,083,360
Mules	51,654	120.00	6,198,480
Milch cows	1,107,233	40.00	44,289,320
Other cattle	3,530,304	25.00	88,257,600
Swine	6,312,634	11.00	69,438,974
Sheep	889,726	5.50	4,893,493
Total			$365,161,227

TOTAL ACREAGE IN FARMS OF IOWA, AVERAGE ACREAGE IN FARMS, AVERAGE VALUE FARMS PER ACRE, TOTAL VALUE FARMS, VALUE FARM MACHINERY, AVERAGE VALUE FARM MACHINERY PER FARM, RURAL POPULATION, ETC.

Total number of acres in farm lands	30,221,356
Number of farms (Iowa Dept. of Agriculture Statistical reports, January, 1910)	190,488
Average acreage in farms (Iowa Dept. of Agriculture Statistical reports, January, 1910)	158.66
Average value per acre (estimated)	$ 75.00
Total value farms of Iowa (estimated)	$2,266,601,700
Total value farm machinery (estimated)	$ 76,195,200
Average value farm machinery, per farm	$ 361.00
Rural population (Iowa census, 1905)	1,142,114
Number rods tiling in Iowa	39,744,166
Number silos in use on Iowa farms	1,556
Number manure spreaders in use on Iowa farms	59,248
Average monthly wage paid farm help	$ 26.50
Number cattle shipped in for feeding, 1909	301,896
Number sold for slaughter, 1909	1,101,488
Number sheep shipped in for feeding, 1909	259,726
Number sheep sold for slaughter, 1909	448,338
Number poultry on Iowa farms	22,062,707
Value poultry	$ 11,031,353
Average number dozen eggs received yearly	84,726,975
Total value eggs received @ $ .17.54 per dozen	$ 14,827,220

GENERAL SUMMARY.

Value of crops and other farm products, 1909	$ 466,170,849
Value of live stock, January 1, 1910	365,161,227
Total for 1909	$ 831,332,076
Total for 1908	802,354,646
Increase year 1909 over 1908	$ 28,977,430
Increase year 1909 over 1907	101,005,105
Total value farms and farm machinery, farm crops and live stock at close of year 1909	$3,174,128,976
Or an average value per farm of	$ 16,663

PART I.

Report of the Iowa Weather and Crop Service for 1909.

George M. Chappel, Director.

This report has been compiled from the monthly and weekly bulletins of the Iowa Weather and Crop Service, the purpose being to present in a condensed form the principal climatic features of the year, together with the tabulated statistics of the staple soil products of the state, for future reference.

The equipment of the co-operative meteorological stations has been kept up to a high standard through the generous co-operation of the Hon. Chief U. S. Weather Bureau. Self-registering maximum and minimum thermometers, rain gages and instrument shelters have been issued whenever necessary to improve the records.

Meteorological reports were received regularly each month from 122 stations in charge of co-operative observers, and also from the U. S. Weather Bureau stations at Des Moines, Davenport, Dubuque, Charles City, Keokuk, Sioux City and Omaha, Nebraska.

During the six crop months of 1909, this office distributed about 42,500 copies of the weekly weather crop bulletin and during the year 22,000 copies of the Monthly Climatological Report of the Weather and Crop Service.

The distribution of the daily weather forecasts, by mail, rural telephone and rural mail service has been maintained with very little variation in the number distributed as compared with the number issued in 1908. About one hundred thousand rural telephone subscribers and nearly seven thousand patrons of the rural mail routes receive the forecasts daily and special warnings of the approach of cold waves and heavy snows whenever issued.

The tabulation of the precipitation data for the several drainage basins of the state has been completed, and the tables are being printed by the Chief U. S. Weather Bureau.

CLIMATOLOGY OF THE YEAR 1909

The mean temperature was very nearly normal, there being an excess of only 0.1°; but the average snowfall was considerably above the normal of the past twenty years. The average snowfall was greater than ever before recorded since state-wide observations began in 1890, and the average precipitation has been exceeded only once, in 1901, during that time. January, February, June and November gave an excess of temperature and precipitation. There was a deficiency of both temperature and precipitation during March, May and October, while April, July, September and December gave a deficiency of temperature and an excess of precipitation. August gave an excess of temperature and a deficiency of precipitation, and both the temperature and precipitation were below normal in October. The spring and early summer months were cool and wet; but August was hot and dry. The most notable characteristics of the weather during 1909 were the continuously cold weather during the fore part of the planting season; the excessive rains in June and the first half of July; the droughty conditions in August; the high temperature and excessive precipitation in November; and the severe cold and abnormally heavy snowfall in December.

Barometer.—The mean pressure of the atmosphere for the year 1909 was 30.02 inches. The highest observed pressure was 30.71 inches, at Dubuque, Dubuque county, on January 7th, and at Sioux City, Woodbury county, on January 30th. The lowest pressure observed was 29.06 inches, at Davenport, Scott county, on January 29th. The range for the State was 1.65 inches.

Temperature.—The mean temperature for the State was 47.6°, which is 0.1° above the normal for the State. The highest temperature reported was 103°, at Bloomfield, Davis county, on August 15th, and at Baxter, Jasper county, on August 16th. The lowest temperature reported was —26°, at Inwood, Lyon county, on February 15th and December 29th. The range for the State was 129°.

Precipitation.—The average amount of rain and melted snow for the year as shown by complete records of 97 stations, was 40.01 inches, which is 7.36 inches above the normal, and 4.75 inches above the average amount in 1908. The greatest amount recorded at any station for the year was 53.48 inches, at Perry, Dallas county. The least amount recorded was 27.20 inches, at Buckingham, Tama county. The greatest monthly rainfall was 13.30 inches, at Afton, Union county, in June. The least monthly precipitation was a trace, at Fairfield, Jefferson county, in August. The greatest amount in any 24 consecutive hours was 6.50 inches, at Allerton, Wayne county, on July 6th. The average amount of snowfall was 46.8 inches. The greatest amount of snowfall, unmelted, at any station during the year was 90.8 inches, at Algona, Kossuth county. The greatest monthly snowfall was 32.0 inches, at Perry, Dallas county, and the greatest 24-hour snowfall was 20.0 inches, at Humboldt, Humboldt county, on March 7th. Measurable precipitation occurred on an average of 104 days.

WIND.—The prevailing direction of the wind was south. The highest velocity reported was at Sioux City, Woodbury county, 72 miles per hour, from the northwest, on January 29th.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 152; partly cloudy, 92, and cloudy, 121, as against 176 clear days; 96 partly cloudy; and 94 cloudy days in 1908. The duration of sunshine was below normal in all but the summer months when it was slightly above the seasonal average.

MONTHLY SUMMARIES

JANUARY.

The average temperature for the month was considerably above the normal, altho seasonable temperature for January prevailed during the first half and the last three days of the month. The coldest periods of the month were between the 5th and 12th, and the 29th and 31st, when the minimum temperatures were near or below zero. The coldest day was on the 6th when the minimum temperature ranged from 10 degrees below zero in the southern counties to 25 degrees below zero in several of the northern counties. From the 13th to the 28th the weather was unseasonably warm, especially on the 23d, when the highest temperature ever recorded in January occurred at several stations in the southeastern part of the State. The last three days of the month were cold with minimum temperatures generally below zero. There was considerably more precipitation than usual, notwithstanding the fact that but little moisture fell prior to the 28th. Small amounts of snow fell between the 4th and 7th, and on the 15th and 16th. Light rain fell between the 18th and 23d with an excessive amount of foggy weather. Light rain began on the 28th increasing to heavy rain in the evening and turning to snow during the night. This storm was attended by extremely high northwest winds which continued from the night of the 28th to the morning of the 30th, making it one of the worst blizzards experienced in this section for many years. The high winds caused the snow to drift badly, and blew down hundreds of windmills and thousands of telegraph and telephone poles. All street car and railroad train service was practically abandoned, and many head of live stock perished from the cold and exposure. The storm was so fierce that live stock would not face the wind and flying snow to seek shelter. The wind, during the storm, attained a maximum velocity of 72 miles per hour at Sioux City; 66 miles at Omaha, Nebr.; 44 miles at Des Moines; 37 miles at Keokuk; 36 miles at Davenport; and 31 miles at Dubuque.

There was some plowing done between the 24th and 27th in the southeastern counties, but the alternating thawing and freezing weather was not favorable to fall grain.

TEMPERATURES.—The monthly mean temperature for the State, as shown by the records of 113 stations, was 21.2°, which is 1.9° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 17.8°, which is 1.6° above the normal; Central section, 21.3°, which is 2.1° above the normal; Southern section, 24.4°, which is 2.0° above the normal. The highest monthly mean was 28.4° at Ottumwa, Wapello county, and the lowest monthly mean 13.2° at Rock Rapids, Lyon county. The highest temperature reported was 72° at Keokuk, Lee county, on the 23d; the lowest temperature reported was 25° below zero at Grand Meadow in Clayton, Northwood in Worth, and Ridgeway in Winneshiek counties, on the 6th. The average monthly maximum was 55.1°, and the average monthly minimum was 17.9° below zero. The greatest daily range was 50° at Ames, Story county. The average of the greatest daily ranges was 38.8°.

Precipitation.—The average precipitation for the State, as shown by the records of 119 stations, was 1.66 inches, which is 0.61 inch above the normal. By sections the averages were as follows: Northern section, 1.61 inches, which is 0.79 inch above the normal; Central section, 1.77 inches, which is 0.67 inch above the normal; Southern section, 1.60 inches, which is 0.36 inch above the normal. The greatest amount, 3.74 inches, occurred at Ridgeway, Winneshiek county, and the least, 0.41 inch, at Le Mars, Plymouth county. The greatest amount in twenty-four hours, 2.10 inches, occurred at Lacona, Warren county, on the 28th. Measurable precipitation occurred on an average of 6 days.

The average snowfall, unmelted, was 7.8 inches. By sections, the averages were as follows: Northern section, 9.3 inches; Central section, 8.2 inches; Southern section, 5.8 inches. The greatest monthly snowfall, 20.0 inches, occurred at Elkader, Clayton county, and the greatest amount in twenty-four hours, 8.0 inches, at Northwood, Worth county, on the 15th, and at Iowa Falls, Hardin county, on the 29th.

Sunshine and Cloudiness.—The average number of clear days was 9; partly cloudy, 6; cloudy, 16. The duration of sunshine was below the normal, the percentage of the possible amount being 29 at Davenport; 28 at Des Moines; 30 at Dubuque; 34 at Keokuk, and 35 at Sioux City.

Wind.—South winds prevailed. The highest velocity reported was 72 miles per hour from the northwest, at Sioux City, Woodbury county, on the 29tn.

FEBRUARY.

The average temperature for the State for the month of February was much above the normal, and has been exceeded but twice in the past 20 years. In February, 1892, the average was 1.9° higher, and in February, 1896, it was 1.2° higher than the average for the past month. The lowest average temperature for February during the past 20 years was 12.2° in 1899, or 14° per day lower than for February, 1909. Over the larger part of the State the month was comparatively mild and at numerous stations in the southern and southeastern and at a few stations in the central counties the minimum temperature for the month was above zero. It is the first time in 27 years that sub-zero temperatures have not been recorded during February at Des Moines and Dubuque. On the other hand, reports indicate that the month was very severe in the northwestern counties where the temperature was below zero on several days, and the monthly minimum ranged from 18° to 26° below zero. The weather was remarkably warm from the 1st to the 9th, and moderately warm from the 16th to the 23d, and from the 26th to the close of the month. The highest temperature was recorded at most stations on the 4th. The coldest period was between the 9th and 16th, the lowest temperature being recorded on the 15th. Another cold period occurred on the 24th and 25th.

The average precipitation was generally above the normal, there being only 29 out of 106 stations that reported a definciency. For the State as a whole, the daily amounts of precipitation were not very large, but rain or snow was frequent. There were but two days between the 5th and 27th on which rain or snow did not fall at some station in the State. The worst storm of the month was on the 9th, when the second severe blizzard of the winter occurred. This storm was especially severe in the northwestern counties where the snowfall was heavy and the wind velocity was over 50 miles per hour. The snow drifted badly and caused a complete suspension of all railroad and street car traffic. Many deep snow drifts, caused by this storm, were still visible in the northern counties at the close of the month.

Another storm with blizzard characteristics occurred on the 14th but was not heavy enough to cause much damage except to again fill up the narrow cuts which had been shoveled through the drifts caused by the previous storm. Some damage has been done to fall grains, clover and alfalfa by the alternating thawing and freezing weather.

Temperature.—The monthly mean temperature for the State, as shown by the records of 114 stations, was 26.2°, which is 7.0° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 21.8°, which is 5.6° above the normal; Central section, 26.8°, which is 7.2° above the normal; Southern section, 30.0°, which is 8.2° above the normal. The highest monthly mean was 34.2°, at Keokuk, Lee county, and the the lowest monthly mean 17.4°, at Sibley, Osceola county. The highest temperature reported was 62°, at Burlington, Fairfield, Keokuk, and Ottumwa, in Des Moines, Jefferson, Lee and Wapello counties, on the 4th; the lowest temperature reported was 26° below zero, at Inwood, Lyon county, on the 15th. The average monthly maximum was 54.4°, and the average monthly minimum was 4.1° below zero. The greatest daily range was 61°, at Creston, Union county. The average of the greatest daily ranges was 38.2°.

Precipitation.—The average precipitation for the State, as shown by the records of 120 stations, was 1.54 inches, which is 0.48 inch above the normal. By sections the averages were as follows: Northern section, 1.42 inches, which is 0.48 inch above the normal; Central section, 1.60 inches, which is 0.52 inch above the normal; Southern section, 1.59 inches, which is 0.44 inch above the normal. The greatest amount, 4.72 inches, occurred at Perry, Dallas county, and the least, 0.30 inch, at Lenox, Taylor county. The greatest amount in twenty-four hours, 1.50 inches, occurred at Fairfield, Jefferson county, on the 7th.

The average snowfall, unmelted, was 7.7 inches, the average for the three sections being as follows: Northern section, 11.9 inches; Central section, 7.1 inches; Southern section, 4.1 inches. The greatest monthly snowfall, 25.0 inches, occurred at Rockwell City, Calhoun county, and the greatest 24-hour amount, 12.0 inches, occurred at Rockwell City on the 10th.

Measurable precipitation occurred on an average of 5 days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 11; partly cloudy, 6; cloudy, 11. The duration of sunshine was below the normal, the percentage of the possible amount being 55 at Charles City; 47 at Davenport; 48 at Des Moines; 37 at Dubuque; 52 at Keokuk, and 44 at Sioux City.

WIND.—Southwest winds prevailed. The highest velocity reported was 53 miles per hour from the northwest, at Sioux City, Woodbury county.

THE WINTER OF 1908-1909.

The mean temperature for the three winter months was 24.9°, which is 4.2° above the normal for the State. The highest temperature reported was 72° at Keokuk, Lee county, on January 23d. The lowest temperature reported was 26° below zero at Inwood, Lyon county, on February 15th. The average monthly precipitation for the state was 1.26 inches and the average total precipitation was 3.77 inches, or 0.47 inch above the winter normal. The average total snowfall, unmelted, was 19.3 inches, or one inch more than for the winter of 1907-1908. The average number of days on which .01 inch or more of precipitation was reported was 14, or one more than the average for the winter of 1907-1908. The coldest periods of the winter were from January 5th to 13th; January 29th to 31st, and from February 5th to 16th, but the severe cold of the last period was confined to the northwestern counties. The winter was 1.1° colder than the winter of 1907-1908, and 1.8° warmer than the winter of 1906-1907. The average number of clear days was 35; partly cloudy, 20; cloudy, 35, as compared with 39 clear, 21 partly cloudy, and 31 cloudy days during the winter of 1907-1908.

MARCH.

March, 1909, will go on record as furnishing an unusual variety of weather conditions. The first six days of the month were mild and pleasant but most of the remainder of the month was cold with frequent snow and rain storms, accompanied by thunder and lightning and brisk to high winds. The snowfall in the central and northern counties was exceptionally heavy, and exceeded all previous records for March at several stations. The low temperatures also broke all former records for the second decade of the month in the north central counties and the severity of the thunder during the snow storm on the 9th was phenomenal. The average temperature for the month was slightly below the normal, yet at the central station there was an average daily deficiency of six degrees during the last 23 days. The only days between the 8th and 31st on which there was an excess were the 22d, 23d and 24th. The 23d was the warmest day of the month when the maximum temperatures ranged from 45° in the northern to 71° in the southern counties. The lowest temperature for the month at all stations was recorded on the 17th and was generally below zero in the northern districts, the lowest being 15 below zero.

The average precipitation for the state was slightly below the normal for March, but the average snowfall was considerably above the normal and was excessive in many localities. Reports indicate that there was good sleighing from five to ten days in northern districts, which is unusual for the time of the year. Notwithstanding the fact that there was a deficiency in precipitation, there was less than the usual amount of sunshine. Reports vary as to the condition of clover and winter grains; some indicate that the alternating freezing and thawing weather has had an injurious effect and others that the plants are still in good condition, but the majority show that there has not been sufficient spring growth to permit an accurate estimate. All reports, however, agree that the continued cold nights have been favorable for fruit.

Temperature.—The monthly mean temperature for the state, as shown by the records of 116 stations, was 32.5°, which is 1.5° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 29.6°, which is 1.6° below the normal; Central section, 32.4°, which is 1.8° below the normal; Southern section, 35.6°, which is 1.1° below the normal. The highest monthly mean was 40.0° at Ottumwa, Wapello county, and the lowest monthly mean was 28.2° at Charles City and Fort Dodge, in Floyd and Webster counties. The highest temperature reported was 71°, at St. Charles, Madison county, on the 23d; the lowest temperature reported was —15°, at Iowa Falls, Webster City and Zearing, in Hardin, Hamilton and Story counties, on the 17th. The average monthly maximum was 59.6° and the average monthly minimum was 0.5°. The greatest daily range was 48° at Carroll, Carroll county. The average of the greatest daily ranges was 33.4°.

Precipitation.—The average precipitation for the state, as shown by the records of 120 stations, was 1.53 inches, which is 0.39 inch below the normal. By sections the averages were as follows: Northern section, 1.48 inches, which is 0.25 inch below the normal; Central section 1.48 inches, which is 0.50 inch below the normal; Southern section, 1.64 inches, which is 0.41 inch below the normal. The greatest amount, 5.00 inches, occurred at Perry, Dallas county, and the least, 0.28 inch, at Denison, Crawford county. The greatest amount in any twenty-four hours, 2.00 inches, occurred at Humboldt, Humboldt county, on the 7th. The average snowfall, unmelted, was 9.8 inches, the average for the three sections being as follows: Northern section, 13.5 inches; Central section, 9.5 inches; Southern section, 6.3 inches. The greatest monthly snowfall, 32.0 inches, occurred at Perry, Dallas county, and the greatest twenty-four hour amount, 20.0 inches, occurred at Humboldt on the 7th.

Measurable precipitation occurred on an average of 6 days.

Sunshine and Cloudiness.—The average number of clear days was 12; partly cloudy, 12; cloudy, 9. The duration of sunshine was below the normal, the percentage of the possible amount being 56 at Davenport; 49 at Des Moines; 45 at Dubuque; 59 at Keokuk; and 55 at Sioux City.

Wind.—Northwest winds prevailed. The highest velocity reported was 48 miles per hour from the northwest at Sioux City, Woodbury county, on the 13th.

APRIL.

The month was abnormally cold and cloudy with an excessive amount of precipitation in all but the extreme western counties where there was a slight deficiency. Freezing temperatures occurred in all districts every week during April, and the month closed with the temperature at freezing or below in all parts of the state. The average temperature was 2.3° higher than the average for April, 1907, which was the coldest April on record since state-wide observations have been taken and the only one colder than the past month.

The precipitation, like the cold, was almost continuous, there being very few warm or clear days. At least a trace of rain or snow fell in some part of the state on every day during the month and the average amount of snowfall was greater than the average of any preceding April since 1896. Thunder storms accompanied by hail and wind squalls were frequent, and, in many cases, were quite destructive to property. Under such adverse conditions, field work has been retarded and was, at the close of the month, about two weeks behind the average of former years. In the east central and northeast districts, where rain or snow fell almost daily from the 12th to the 30th, farm work is especially backward, and the seeding of oats in those districts was only about three-fourths finished at the close of the month. A large acreage intended for oats has been abandoned in all parts of the state, thereby reducing the acreage of that crop from 10% to 15% below the acreage of last year. The acreage of wheat has, however, been increased and there will be a decided increase in the acreage of corn if favorable weather prevails during May. Wheat and early sown oats are up and in most cases show a good stand, but there is a probability that oats, just beginning to sprout, were injured by the hard freeze which occurred on the night of the last day of the month. The continued cold weather has kept the fruit buds dormant and no blossoms have appeared except in the extreme southern counties, and the indications are thereby very favorable for a good crop.

Clover and all grasses, while making slow growth, are in good condition and reports indicate that there was very little damage done by the alternating freezing and thawing weather during the winter, and the excessive precipitation during April assures another good hay crop.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 117 stations, was 43.8°, which is 4.7° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 40.7°, which is 6.1° below the normal; Central section, 44.1°, which is 4.4° below the normal; Southern section 46.7°, which is 3.6° below the normal. The highest monthly mean was 50.6°, at Keokuk, Lee county, and the lowest monthly mean 37.0°, at Rock Rapids, Lyon county. The highest temperature reported was 86°, at Burlington, Des Moines county, on the 29th; the lowest temperature reported was 14°, at Elma, Howard county, and Fayette, Fayette county, on the 10th. The average monthly maximum was 76°, and the average monthly minimum was 20°. The greatest daily range was 52°, at Hancock, Pottawattamie county, and Storm Lake, Buena Vista county. The average of the greatest daily ranges was 39°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 119 stations, was 4.58 inches, which is 1.75 inches above the normal. By sections the averages were as follows: Northern section, 4.18 inches, which is 1.71 inches above the normal; Central section, 4.95 inches, which is 2.03 inches above the normal; Southern section, 4.60 inches, which is 1.46 inches above the normal. The greatest amount, 9.43 inches, occurred at New Hampton, Chickasaw county, and the least, 0.83 inch, at Hancock, Pottawattamie county. The greatest amount in any twenty-four hours, 4.60 inches, occurred at New Hampton, Chickasaw county, on the 18th. Measurable precipitation occurred on an average of 12 days.

The average amount of unmelted snowfall for the state was 3.1 inches; the greatest amount, 20.8 inches, occurred at Northwood, Worth county.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 9; partly cloudy, 9; cloudy, 12. The duration of sunshine was below the normal, the percentage of the possible amount being 58 at Charles City; 49 at Davenport; 47 at Des Moines; 41 at Dubuque; 59 at Keokuk, and 47 at Sioux City.

WIND.—Northwest winds prevailed. The highest velocity reported was 56 miles per hour from the northwest, at Sioux City, Woodbury county, on the 28th.

MAY.

The average temperature for the month was considerably below the normal and was the lowest for May, with one exception, 1907, since April, 1893. The cool wave that spread over the state at the close of April, continued during the first three days of May and caused freezing temperatures on one or more of those days in all parts of the state and was attended, on the first by snow flurries over the central and northern counties. The night temperatures continued below normal most of the time until the 29th but there were several days when the temperatures were unusually high, especially the fifth when the maximum was 90° or above in all but the extreme southeastern counties.

The precipitation for the state at large was slightly below the normal but there was a slight excess over the district comprising the three northern tiers of counties. The average for the state was four inches less than the average for May, 1908. From the 3d to the 11th and from the 16th to the 23d the weather was generally dry but showers were frequent during the remainder of the month with an occasional heavy downpour, accompanied in several localities by hail and wind squalls which did some damage. On the whole the month was favorable for farm operations and good progress was made in field work Corn was practically all planted by the close of the month except on low and wet ground and cultivation was general. The stand, color and vitality of corn is exceptionally good. Grass and small grain made rapid growth during the latter half of the month and was reported to be nearly up to the average for the last of May. The continued cold weather during April and the fore part of May kept the fruit buds dormant until near the middle of the month thereby escaping any material damage by the late frosts. The average date for all kinds of fruit trees to be in full bloom at Des Moines is about May 5th, but they were not in full blossom this year until May 16th.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 111 stations, was 57.9°, which is 2.2° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 56.3°, which is 2.2° below the normal; Central section, 58.0°, which is 2.2° below the normal; Southern section, 59.3°, which is 2.3° below the normal. The highest monthly mean was 61.0°, at Keokuk, Lee county, and the lowest monthly mean was 54.2°, at Dows, Wright county, and Sibley, Osceola county. The highest temperature recorded was 97°, at Onawa, Monona county, on the 5th; the lowest temperature reported was 18°, at Inwood, Lyon county, on the 2d, and at Washta, Cherokee county, on the 3d. The average monthly maximum was 92.0°, and the average monthly minimum was 24.1°. The greatest daily range was 63°, at Fort Dodge, Webster county. The average of the greatest daily ranges was 45.7°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 121 stations, was 4.34 inches, which is 0.16 below the normal. By sections the averages were as follows: Northern section, 4.59 inches, which is 0.04 inch above the normal; Central section, 4.09 inches, which is 0.38 inch below the normal; Southern section, 4.34 inches, which is 0.13 inch below the normal. The greatest amount, 7.85 inches, occurred at Rockwell City, Calhoun county, and the least, 1.86 inches, at Waterloo, Black Hawk county. The greatest amount in 24 hours, 3.95 inches, occurred at Rockwell City, Calhoun county, on the 14th and 15th. Measurable precipitation occurred on an average of 9 days. The average amount of unmelted snowfall for the state was 0.1 inch; the greatest amount, 2.5 inches, occurred at Grand Meadow, Clayton county.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 12; partly cloudy, 12; cloudy, 7. The duration of sunshine was slightly above the normal, the percentage of the possible amount being 70 at Charles City; 65 at Davenport; 66 at Des Moines; 59 at Dubuque; 75 at Keokuk, and 53 at Sioux City.

JUNE.

The average temperature for the month was only a fraction of a degree above the normal but the rainfall was considerably above the average for June. The first week was moderately warm, there being a daily excess of about three degrees, but on the 8th the temperature was much lower and it remained below normal until the 19th. The lowest temperature occurred generally on the 15th but no frost was reported from the northern stations as there was on June 15, 1908. From the 20th to the close of the month the temperature was considerably above the normal, the maximum occurring at many stations on the 30th.

There was an excess of rainfall in all districts of the State but there were a few comparatively small areas where a slight deficiency was reported, the most notable one being along the Mississippi river from Scott county southward to Des Moines county. The heaviest rainfall was over Union and the adjacent counties where the monthly amounts ranged from

8.00 inches to over 13.00 inches. It was also heavy over the Missouri divide and the extreme northwestern county. Showers occurred at some station in the State on every day of the month except the 19th. And yet there were on an average, 12 clear days. Thunder and lightning accompanied most of the showers but wind squalls and severe hail storms were not as frequent as usual. The frequent and excessive rains caused high water in all rivers and creeks, especially in the western districts. The flat and bottom lands were flooded two or three times and a large acreage of corn was finally abandoned after being replanted once or twice. The surplus moisture also interfered with the cultivation of corn on ground not thoroughly drained and many fields are quite foul. With all the adverse conditions corn on uplands and well drained fields, and these comprise nearly 90 per cent of the total acreage, has made very satisfactory progress considering its late start and much of it is up to the standard for this season of the year and the fields were generally clean. Where the fields have not received proper cultivation the corn is short and uneven and it depends on future weather as to whether or not it matures. The condition of small grain, grass, potatoes and garden truck has improved during the month, but there has been a decline in the condition of fruit.

Temperature.—The monthly mean temperature for the State, as shown by the records of 111 stations, was 69.1°, which is 0.3° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 67.6°, which is 0.2° above the normal; Central section 69.3°, which is 0.3° above the normal; Southern section 70.3°, which is 0.3° above the normal. The highest monthly mean was 72.8° at Keokuk, Lee county, and Keosauqua, Van Buren county, and the lowest monthly mean 64.8°, at Dows, Wright county. The highest temperature reported was 96°, at Keosauqua, Van Buren county, on the 26th; the lowest temperature reported was 40°, at Elma, Howard county, on the 15th. The average monthly maximum was 90°, and the average monthly minimum was 48°. The greatest daily range was 45° at Dows, Wright county. The average of the greatest daily ranges was 32°.

Precipitation.—The average precipitation for the State, as shown by the records of 120 stations, was 6.41 inches, which is 1.89 inches above the normal. By sections the averages were as follows: Northern section, 6.00 inches, which is 1.43 inches above the normal; Central section, 6.15 inches, which is 1.78 inches above the normal; Southern section, 6.41 inches, which is 1.89 inches above the normal. The greatest amount, 13.30 inches, occurred at Afton, Union county, and the least, 2.80 inches, occurred at Davenport, Scott county. The greatest amount in twenty-four hours, 6.00 inches, occurred at Perry, Dallas county, on the 25th. Measurable precipitation occurred on an average of 13 days.

Sunshine and Cloudiness.—The average number of clear days was 12; partly cloudy, 10; cloudy, 8. The duration of sunshine was about normal, the percentage of the possible amount being 74 at Charles City; 57 at Davenport; 62 at Des Moines; 75 at Keokuk, and 51 at Sioux City.

Wind.—South winds prevailed. The highest velocity reported was 48 miles per hour from the Southwest, at Sioux City, Woodbury county, on the 20th.

JULY.

Showers were heavy and frequent from the 3d to the 12th, and the temperature was unusually low from the 3d to the 7th; but, as a whole, July was one of the best harvest months on record. The latter half of the month was characterized by moderately warm weather, light and widely scattered showers, a high percentage of sunshine, and the rarity of thunderstorms and wind squalls. The rainfall was especially heavy over the southern, central and western districts during the first decade, and caused high water in all creeks and rivers within the area of heavy rainfall. Bottom lands were flooded for the third time this season and many thousands of acres of corn had to be abandoned. The heavy rains also prevented haying, and, in the southern districts where the small grain was ready for the harvester, the ground was too wet and soft to run machinery; but after the 12th the weather changed suddenly from wet and cool to comparatively dry and warm. During the second decade much of the belated corn was given some cultivation, but, owing to its rapid growth due to the higher temperature, the stalks soon became too high to permit further cultivation, and many fields were laid by in a weedy condition. The third decade was the warmest part of the month, the 29th being the warmest day, when the maximum temperature ranged generally from 90 to over 100 degrees. During this period the showers continued light and scattered; the 26th was the only day on which the showers were at all general, and, as in the first and second decades, the heaviest rainfall was over the western half of the state. At the close of the month the surface of he ground was dry over the larger part of the state, and the crops in the eastern districts were beginning to feel the effect of the drouth. Exceptionally rapid progress was made during the latter half of the month in haying and harvesting, and most of the hay and grain crops were secured in excellent condition. Corn made remarkably rapid advancement and nearly all the early planted fields were in full tassel and earing nicely at the close of the month. The belated corn was doing its best, but most of it got too late a start to mature unless frost occurs much later than usual. There was some threshing done before the close of the month, and the early reports indicate a good yield of wheat of very fine quality. Oats straw is short but the yield will be fair and the quality is better than for the past two years. Barley is generally poor. Pastures and potatoes were still in good condition at the close of the month, but they, as well as corn, were needing more rain.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 117 stations, was 72.3°, which is 1.1° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section 71.2°, which is 0.9° below the normal; Central section, 72.1°, which is 1.6° below the normal; Southern section 73.5°, which is 1.0° below the normal. The highest monthly mean was 75.8° at Thurman, Fremont county, and the lowest monthly mean, 69.3°, at Sibley, Osceola county. The highest temperature reported was 102°, at Elkader, Clayton county, and Ridgeway, Winneshiek county, on the 29th; the lowest temperature reported was 46° at Washta, Cherokee county, on the 24th. The average monthly maximum was 95°, and the average monthly minimum was 52°.

The greatest daily range was 42°, at Decorah, Winneshiek county. The average of the greatest daily ranges was 31°.

Precipitation.—The average precipitation for the State, as shown by the records of 126 stations, was 4.77 inches, which is 0.33 inch above the normal. By sections the averages were as follows: Northern section, 4.08 inches, which is 0.20 inch below the normal; Central section, 4.25 inches, which is 0.26 inch below the normal; Southern section 5.99, which is 1.45 inches above the normal. The greatest amount, 12.20 inches, occurred at Mount Ayr, Ringgold county, and the least, 1.20 inches, at Waterloo, Black Hawk county. The greatest amount in twenty-four hours, 6.50 inches, occurred at Allerton, Wayne county, on the 6th. Measurable precipitation occurred on an average of 10 days.

Sunshine and Cloudiness.—The average number of clear days was 15; partly cloudy, 8; cloudy, 8. The duration of sunshine was below the normal, the percentage of the possible amount being 80 at Charles City; 63 at Davenport; 63 at Des Moines; 65 at Dubuque; 64 at Keokuk, and 55 at Sioux City.

Wind.—Southwest winds prevailed. The highest velocity reported was 38 miles per hour from the north, at Sioux City, Woodbury county, on the 30th.

Tornado in Cherokee County.

Soon after 6 P. M., of Sunday, July 11th, a black, threatening, funnel-shaped cloud was observed several miles west of Washta that proved to be a small but vigorous tornado. The first farm struck by the storm was the Kerney Wise place, about two miles west of town, where the trees of a thick grove on each side of the house were broken off, but no damage was done to the building. It then swept in an east-southeast direction for forty rods where the one and a half story house of Elijah Crum was blown six rods to the southeast, turned bottom side up and smashed beyond repair. The barn, which contained several horses, was completely torn to pieces and scattered over the surrounding fields. Only one of the horses was hurt and that one but slightly. The foundation was all that remained of the large hog house; and the corn crib, recently built, was moved several feet and badly damaged. Near by observes at this point saw two funnel-shaped clouds, but only one of them reached the earth. The storm track was about four rods wide at the Wise farm, but varied from two to four rods wide as it passed through a corn field between the Crum and the Little Sioux river. The storm crossed the river below the S. Lyman place at nearly right angles to the river, taking up a large amount of water as it went over, and then raised up, dipping down again about six miles southeast of Washta, where it destroyed the barns and outbuildings on the S. Cipperly place, the R. E. Knapp place, occupied by Herbert Hind, and the Henry Ashton place. The storm track was here about twenty rods wide, and two miles in length. Mr. H. L. Felter, co-operative observer at Washta, who kindly furnished the information for this report, says that there was very little wind except quite near the tornado; that there was about .05 inch of rain preceding the storm and that the only thunder heard was at a distance and thirty minutes before the storm. A very heavy roar was heard during the passage of the cloud. The estimated damage to crops and property is placed at $8,000, but there was no loss of life and no one was seriously injured.

AUGUST.

August, 1909, will be noted for its uniformly high temperatures, the small number of cloudy days, and, over the larger part of the State, the small amount of rainfall. Both the day and night temperatures were high until the 28th, when a cool wave passed over the State, resulting in light frosts on low ground on the morning of the 29th, over the northern and, in a few localities, in southern districts; but no damage was done to vegetation. The maximum temperatures were up to or above 90° on ten days in northern and twenty-one days in southern counties, and the average of the monthly maximum temperatures was 96°

The rainfall was deficient in all but the northeast and extreme north central counties; yet at least a trace of rain fell in some part of the State on every day of the month, except the 19th and 20h. During the second decade, showers were frequent and the rainfall heavy over the northeast and north central districts; but over the remainder of the State the showers were extremely local, and the rainfall generally very light. The monthly rainfall ranged from a trace in Jefferson county to 8.21 inches in Chickasaw county. Drouthy conditions prevailed during the entire month over the southern half of the State, and the condition of the corn crop deteriorated from 10 to 25 per cent. There was also some depreciation in a few localities in the northern districts, but the early planted corn, on rich soil and well cultivated fields, withstood the drouth remarkably well and much of it was well up to the average of past years at the close of the month.

The drouth also seriously affected the pastures, fall plowing, late potatoes and the fruit crops. The pasturage was so short in many sections that it was necessary to give stock extra feed. The usual amount of fall plowing has been reduced and the acreage of fall grains will be considerably less than was anticipated. The second crop of hay will also be short, and the clover seed crop will be much smaller than last year. The dry, cloudless weather was favorable for stacking and threshing grain, and that work progressed rapidly. Shock threshing was practically completed at the close of the month.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 114 stations, was 76.1°, which is 4.3° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 74.7°, which is 4.4° above the normal; Central section, 76.2°, which is 4.3° above the normal; Southern section, 77.3°, which is 4.0°, above the normal. The highest monthly mean was 80.4°, at Bloomfield, Dallas county, and the lowest monthly mean 71.2°, at Olin, Jones county. The highest temperature reported was 103°, at Bedford, Taylor county, on the 16th, and at Bloomfield, Davis county, on the 15th; the lowest temperature reported was 33°, at Washta, Cherokee county, on the 29th. The average monthly maximum was 96°, and the average monthly minimum was 44°. The greatest daily range was 52, at Massena, Cass county. The average of the greatest daily ranges was 34°.

Precipitation.—The average precipitation for the State, as shown by the records of 122 stations, was 1.81 inches, which is 2.18 inches below the normal. By sections the averages were as follows: Northern section, 3.04 inches, which is 0.48 inch below the normal; Central section, 1.51 inches, which is 2.51 inches below the normal; Southern section, 0.87 inch, which is 3.53 inches below the normal. The greatest amount, 8.21 inches, occurred at New Hampton, Chickasaw county, and the least, a trace, at Fairfield, Jefferson county. The greatest amount in twenty-four hours, 4.30 inches, occurred at New Hampton, Chickasaw county, on the 9th. Measurable precipitation occurred on an average of five days.

Sunshine and Cloudiness.—The average number of clear days was 21; partly cloudy, 8; cloudy, 2. Duration of sunshine was above the normal, the percentage of the possible amount being 83 at Charles City, 78 at Davenport, 84 at Des Moines, 65 at Dubuque, 84 at Keokuk, and 81 at Sioux City.

Wind.—South winds prevailed. The highest velocity reported was 36 miles per hour from the southeast, at Sioux City, Woodbury county, on the 23d.

SEPTEMBER.

The hot and drouthy conditions prevailing at the close of August were broken by lower temperatures on the 1st and copious and general showers on the 2d of September. From the 2d to the 14th showers occurred in some part of the State every day, and were general and the rainfall heavy between the 12th and 14th. Another period of showery weather prevailed between the 19th and 24th, but the last six days were generally clear and pleasant, although the night temperatures were quite low.

The temperatures were below normal from the 1st to the 8th; 14th to 16th; 22d to 27th, and on the last day of the month; the lowest occurring on the 27th when the minimum was below the freezing point at several stations in the northern counties. Light frosts occurred on low ground in the extreme northern part of the state on the 1st and 5th, and in all parts of the state on the 23d, 24th and 27th. On the latter date the frost was heavy on low ground over the northern and northeastern counties, but reports indicate that no damage was done to vegetation except in a very few places where some of the tender vines were injured.

The warmest periods were between the 9th and 13th and from the 17th to the 21st, when the maximum temperatures ranged from 80 to 87 degrees over the northern and from 85 to 94 degrees over the southern districts, the highest occurring generally on the 12th or 13th. The rains during the first half of the month revived the pastures and softened the ground sufficiently to permit fall plowing to be resumed, and excellent progress was made in plowing and seeding fall grains during the remainder of the month. The rains came too late, however, to be of much value to the early planted corn, but reports indicate that the rains and the subsequent warm weather were beneficial to the late planted corn, which improved one or two points during the month. The dry weather during the last six days caused the corn to mature and dry out rapidly, and nearly 90 per cent of the crop was safe at the close of the month from any damaging effect of frost. Heavy wind squalls on the 12th did material damage in blowing down corn over the northern, western and southwestern counties.

The potato crop did not recover from injury received during the August drouth and the yeild will be very light.

The scond crop of hay was lighter than last year but was put up in good condition.

Temperature.—The monthly mean temperature for the state, as shown by the records of 114 stations, was 62.4°, which is 1.3° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 60.6°, which is 1.5° below the normal; Central section, 62.6°, which is 1.0° below the normal; Southern section 64.1°, which is 1.4° below the normal. The highest monthly mean was 66.7°, at Bloomfield, Davis county, and the lowest monthly mean 58.4°, at Estherville, Emmet county. The highest temperature reported was 94°, at Bonaparte, Van Buren county and Fairfield, Jefferson county, on the 13th, and at Clarinda, Page county, and Massena, Cass county, on the 12th; the lowest temperature reported was 30°, at Elkader, Clayton county, Fayette, Fayette county, and Humboldt, Humboldt county, on the 27th, and at Washta, Cherokee county, on the 24th. The average monthly maximum was 88°, and the average monthly minimum was 36°. The greatest daily range was 54°, at Olin, Jones county. The average of the greatest daily ranges was 36°.

Precipitation.—The average precipitation for the state, as shown by the records of 122 stations, was 3.58 inches, which is 0.17 inch above the normal. By sections the averages were as follows: Northern section, 3.54 inches, which is 0.13 inch above the normal; Central section, 3.23 inches, which is 0.01 inch below the normal; Southern section, 3.98 inches, which is 0.41 inch above the normal. The greatest amount, 7.34 inches, occurred at Thurman, Fremont county, and the least, 1.39 inches, at Gilman, Marshall county. The greatest amount in twenty-four hours, 3.35 inches, occurred at Amana, Iowa county, on the 13th and 14th. Measurable precipitation occurred on an average of 9 days.

Sunshine and Cloudiness.—The average number of clear days was 14; partly cloudy, 8; cloudy, 8. The duration of sunshine was about normal, the percentage of the possible amount being 66 at Charles City; 70 at Davenport; 64 at Des Moines; 54 at Dubuque; 60 at Keokuk, and 55 at Sioux City.

Wind.—Southeast winds prevailed. The highest velocity reported was 41 miles per hour from the South, at Sioux City, Woodbury county, on the 18th.

OCTOBER.

The mean temperature for the month was slightly below the normal; the average daily deficiency ranged from 2.2 degrees in the northern districts to 2.3 degrees in the southern districts. The warmest periods of the month were between the 1st and the 9th and between the 29th and 31st, when the maximum temperatures ranged from 70 to 89 degrees in the northern, and from 75 to 95 degrees in the southern districts; the highest occurring generally on the 2d, but at many stations the maximum for the month occurred on the 3d, 4th, 6th, 7th or 8th. The coolest period was between the 10th and 20th; the lowest temperature occurred on the 12th or the 13th, except over the extreme northern and northeastern counties where it occurred on the 28th. During the past 19 years, there have been five cooler Octobers, but there are no records of as low temperature during the first 15 days of October as was registered this month on the 12th and 13th, when the minimum temperatures ranged from 10 to 20 degrees over the northern and from 15 to 23 degrees over the southern counties. The ground was frozen to such an extent that potatoes remaining in the ground were considerably damaged. Cabbage and turnips were also injured, and over the southern portion of the state, many thousand bushels of apples were frozen on the trees. As there had been no killing frost or freezing temperatures previously to the 12th, much of the vegetation was still green; and corn, though ripe, was not dry enough to withstand such a severe freeze without injury to its germinating qualities. The leaves fell from the trees soon after the freeze without their usual fall coloring.

The precipitation was generally below the normal over the northern two-thirds of the state and slightly above the normal over the southern third. There was no rain between the first and seventh, but from the 8th to the 12th the rainfall was general and was mixed with slight snow flurries on the 11th and 12th, which is much earlier than usual for the first snow of the season. From the 13th to the 19th, there were only a few scattered and generally light showers, but from the 20th to the 23d and on the afternoon and evening of the 31st the ranfall was again quite general. Between the 24th and the 30th the weather was generally clear and pleasant. While the rainfall was below normal, there has been enough moisture for the growth of winter wheat and for fall plowing, but not enough to have any material effect on the stage of streams and ponds which are low. Corn husking was begun about the middle of the month but reports indicate that there is still too much moisture in the ears to warrant its being cribbed in large quantities. A great deal of care should be taken in selecting and caring for the seed corn, or next year's crop will show a very poor stand.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 114 stations, was 49.7°, which is 2.2° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 47.9°, which is 2.2° below the normal; Central section 49.7°, which is 2.1° below the normal; Southern section 51.5°, which is 2.3° below the normal. The highest monthly mean was 57.8°, at Mt. Plesant, Henry county, and the lowest monthly mean 42.6°, at Elkader, Clayton county. The highest temperature reported was 97°, at Bloomfield, Davis county, on the 2d; the lowest temperature reported was 10°, at Washta, Cherokee county, on the 13th. The average monthly maximum was 85°, and the average monthly minimum was 18°. The greatest daily range was 54°, at Iowa Falls, Hardin county. The average of the greatest daily ranges was 40°.

Precipitation.—The average precipitation for the state, as shown by the records of 118 stations, was 2.22 inches, which is 0.13 inch below the normal. By sections the averages were as follows: Northern section, 1.71 inches, which is 0.56 inch below the normal; Central section, 2.08 inches, which is 0.36 inch below the normal; Southern section, 2.87 inches, which is 0.52 inch above the normal. The greatest amount, 4.70 inches, occurred at Cumberland, Cass county, and the least, 0.48 inch, at Independence, Buchanan county. The greatest amount in twenty-four hours, 2.33 inches, occurred at St. Charles, Madison county, on the 9th. Measurable precipitation occurred on an average of 6 days.

Sunshine and Cloudiness.—The average number of clear days was 16; partly cloudy, 6; cloudy, 9. The duration of sunshine was slightly below the normal, the percentage of the possible amount being 68 at Charles City; 66 at Davenport; 59 at Des Moines; 58 at Dubuque; 55 at Keokuk, and 56 at Sioux City.

Wind.—Southeast winds prevailed. The highest velocity reported was 49 miles per hour from the north at Sioux City, Woodbury county, on the 11th.

The average snowfall was a trace, and the greatest amount in 24 hours, 0.5 inch at Estherville, Emmet county, on the 12th, and also at Keokuk, Lee county.

NOVEMBER.

The month will go on record as having been the wettest and one of the warmest Novembers since State-wide observations began in 1890. Both the temperature and precipitation were above the normal at every station in the State, which is unprecedented; and the temperature was above the normal on all but four or five days of the month. The average temperature for the State was 42.4 degrees, which is 6.5 degrees above the normal and the highest average for November during the past nineteen years, except in 1899, when the average was 43.9°. The first decade was the warmest part of the month, and the highest temperature occurred generally between the 4th and 6th, when the maximum temperaure ranged from 66° to 77° over the northern district, which comprises the three northern tiers of counties; from 68° to 81° over the central district, comprising the three central tiers of counties; and from 74° to 84° over the southern counties. The only cold periods of the month were on the 17th and 18th, and the 22d and 23d; the lowest temperature occurring generally on the 18th, when minimum temperatures ranged from -4° to 12° over the northern district; the lowest being reported from the western part of the district or the northwestern part of the State. Over the central counties the minimum ranged from 3° to 17°, and from 6° o 18° over the southern district.

The precipitation was excessive in all districts, and was well distributed throughout the month, there being only three days on which rain or snow did not fall in some part of the State, viz.: 4th, 18th and 19th. The heaviest precipitation occurred between the 11th and 16th, but the amounts were heavy on the 1st, 7th, 22d, 23d and 28th, and the monthly amounts at many stations exceeded all former records for November. The amounts of snowfall over the northern counties also exceeded all November records. Heavy snow fell on the 15th, 16th, 22d and 23d, and the monthly amounts ranged from 8 inches to 29.5 inches in the northern district. The frequent and heavy rains and the frostless weather caused high water in all rivers and creeks, many of which, especially in the central and western districts, were at flood stage and overflowed the bottom lands, which is also an unprecedented condition for November. The rains interfered with the corn harvest and made the roads so muddy that they were almost impassable. Much of the corn is lying on the ground, and the grain is seriously damaged by the excessive moisture. From 25 to 40 per cent of the corn crop is still in the fields, and, unless the weather conditions improve at an early date, a large percentage of it will be lost or ruined. Corn in cribs is surcharged with moisture, and the warm, moist weather has caused it to mold badly. The excessive rains have, however, been beneficial for grass, alfalfa and fall grains, all of which are reported to be in good condition. The rains also assure an abundant water supply for the winter and will put the soil in good condition for early spring work, if the weather is favorable at that time. Fall plowing progressed until the close of the month.

Temperature.—The monthly mean temperature for the State, as shown by the records of 117 stations, was 42.4°, which is 6.5° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 38.7°, which is 5.0° above the normal; Central section, 42.8°, which is 7.1° above the normal; Southern section, 45.8°, which is 7.6° above the normal. The highest monthly mean was 50.2°, at Keokuk, Lee county, and the lowest monthly mean, 34.4°, at Sibley, Osceola county. The highest temperature reported was 84°, at St. Charles, Madison county, on the 5th; the lowest temperature reported was -4°, at Washta, Cherokee county, on the 18th. The average monthly maximum was 74°, and the average monthly minimum was 9°. The greatest daily range was 44°, at Estherville, Emmet county, and at Woodburn, Clarke county. The average of the greatest daily ranges was 37°.

Precipitation.—The average precipitation for the State, as shown by the records of 123 stations, was 5.39 inches, which is 4.00 inches above the normal. By sections the averages were as follows: Northern section, 5.89 inches, which is 4.58 inches above the normal; Central section, 5.11 inches, which is 3.68 inches above the normal; Southern section, 5.18 inches, which is 3.74 inches above the normal. The greatest amount, 11.48 inches, occurred at Humboldt, Humboldt county, and the least, 2.07 inches, at Independence, Buchanan county. The greatest amount in twenty-four hours, 4.08 inches, occurred at Harlan, Shelby county, on the 13th. Measurable precipitation occurred on an average of 10 days.

The average amount of unmelted snowfall was 6.8 inches, averaging as follows: Northern section, 13.7 inches; Central section, 4.5 inches; and Southern section, 2.3 inches; the greatest amount was at Plover, Pocahontas county, 29.5 inches, and the least amount was a trace at a number of stations in the Central and Southern sections.

Sunshine and Cloudiness.—The average number of clear days was 10; partly cloudy, 7; cloudy, 13. The duration of sunshine was below the normal, the percentage of the possible amount being 41 at Charles City; 46 at Davenoprt; 34 at Des Moines; 45 at Dubuque; 43 at Keokuk, and 47 at Sioux City.

WIND.—South winds prevailed. The highest velocity reported was 46 miles per hour from the South, at Sioux City, Woodbury county, on the 10th.

DECEMBER.

December, 1909, will be noted for its low average temperature, excessive cloudiness and the frequency of snow storms. It was the coldest December since state-wide observations began in 1890, and probably the coldest since 1876. The average temperature was 12.1° lower than the average for December, 1908, and 2.9° lower than any other December since 1890. The monthly minimum temperatures were not, however, as low as in 1892, 1901 and 1903, but the weather was continuously cold from the 5th to the 30th inclusive. The first four days were moderate, with maximum temperatures above 40° and ranged from 45° to 60° on the 2d. A cold wave passed over the state on the 5th, and from that date to the 30th the maximum temperatures were below the freezing point, except on one or two days, and the minimum temperatures were near or below zero. At many stations, the minimum temperature was below zero on a greater number of days than was ever before recorded during the month of December. The lowest temperature was recorded on the 29th, except in the extreme southeastern counties where the minimum occurred on the 30th.

The average precipitation was .99 inch above the normal and has been exceeded in December only twice during the past 20 years. In 1891 the average precipitation was .26 inch greater, and in 1902 it was .05 inch greater than the average for the past month. Rains were general from the 1st to the 3d, changing to snow in the northern district on the latter date, to sleet over the southern and eastern districts on the 4th and to snow over the larger part of the state on the 5th. After the 5th, snow fell at frequent intervals, but the daily amounts were generally light except on the 24th and 25th, when the amounts ranged from 2 to 12 inches of dry snow; the larger amounts being reported from the central and east central districts. At least a trace of precipitation fell at some station in the state on every day of the month, except the 31st, and the number of days with .01 inch or more of precipitation exceeded all former records for December at several stations. The average total snowfall for the state was 13.7 inches, and the ground was covered with snow from the 3d in the northern and from the 5th in the southern and eastern districts until the close of the month, and there has been more good sleighing than for many years so early in the winter. The snow has afforded good protection to winter grains, meadows, and alfalfa, and they are reported to be in excellent condition. The deep snow and severe cold weather have, however, put a stop to all drainage work and prevented the completion of corn husking. Fully 25 to 30 per cent of the corn is still in the fields, and much of it is covered with snow. The heavy snowfall on the 24th and 25th delayed all freight and the Christmas passenger traffic, but as there was but little wind no trains were stalled.

Temperature.—The monthly mean temperature for the State, as shown by the records of 116 stations, was 15.1°, which is 8.5° below the normal for Iowa. By sections the mean temperatures were as follows:; Northern section, 13.3°, which is 7.6° below the normal; Central section, 15.2°, which is 8.6° below the normal; Southern section, 16.9°, which is 9.3° below the normal. The highest monthly mean was 20.6°. at Keokuk, Lee county, and the lowest monthly mean 10.1°, at Sibley, Osceola county. The highest temperature reported was 60°, at Keosauqua, Van Buren county, on the 1st; the lowest temperature reported was -26°, at Inwood, Lyon county, on the 29th. The average monthly maximum was 49°, and the average monthly minimum was -15°. The greatest daily range was 55°, at Sibley, Osceola county. The average of the greatest daily ranges was 37°.

Precipitation.—The average precipitation for the State, as shown by the records of 114 stations, was 2.18 inches, which is .99 inch above the normal. By sections the averages were as follows: Northern section, 1.75 inches which is .72 inch above the normal; Central section, 2.30 inches which is 1.10 inches above the normal; Southern section, 2.49 inches, which is 1.16 inches above the normal. The greatest amount, 6.10 inches, occurred at Clinton, Clinton county, and the least, .89 inch, at Storm Lake, Buena Vista county, and at West Bend, Palo Alto county. The greatest amount in twenty-four hours, 2.32 inches, occurred at Clinton, Clinton county, on the 12th and 13th.

The average depth of snowfall for the State was 13.7 inches; the greatest depth was 29.0 inches at Sheldon, O'Brien county, and the least was 5.9 inches at West Bend, Palo Alto county.

Measurable precipitation occurred on an average of 11 days.

Sunshine and Cloudiness.—The average number of clear days was 10; partly cloudy, 5; cloudy, 16. The duration of sunshine was below the normal, the percentage of the possible amount being 35 per cent at Charles City; 35 per cent at Davenport; 38 per cent at Des Moines; 36 per cent at Dubuque; 31 per cent at Keokuk, and 35 per cent at Sioux City.

Wind.—Northwest winds prevailed. The highest velocity reported was 50 miles per hour from the northwest, at Sioux City, Woodbury county, on the 16th.

DATES OF LAST KILLING FROST IN SPRING AND FIRST IN AUTUMN, IN IOWA, FOR 1909.

Stations	Killing Frost		Stations	Killing Frost		Stations	Killing Frost		Stations	Killing Frost	
	Last in Spring	First in Autumn		Last in Spring	First in Autumn		Last in Spring	First in Autumn		Last in Spring	First in Autumn
Afton	May 10	Oct. 12	Decorah	May 10	Sep. 27	Iowa Falls	May 10	Oct. 12	Pocahontas	May 10	Oct. 11
Albia	May 10	Oct. 12	Delaware	May 10	Oct. 12	Jefferson		Oct. 11	Ridgeway	May 4	Oct. 12
Algona	May 10	Oct. 11	Denison	May 4	Oct. 11	Keokuk	May 2	Oct. 12	Rock Rapids	May 10	Oct. 12
Allerton	May 10	Oct. 12	Des Moines	May 5	Oct. 12	Keosauqua	May 2	Oct. 12	Rockwell City	May 3	Oct. 11
Alta	May 10	Oct. 12	De Soto	May 10	Oct. 12	Knoxville		Oct. 12	Sac City	May 10	Oct. 12
Alton	May 10	Oct. 11	Dows	May 11		Lamont	May 10	Oct. 12	St. Charles	May 21	Oct. 11
Amana	May 3	Oct. 12	Dubuque	May 3	Oct. 12	Larrabee	May 10	Oct. 12	Sheldon	May 10	Oct. 12
Ames	May 10	Oct. 13	Earlham	May 10	Sep. 27	Le Mars	May 10	Oct. 11	Sibley	May 11	Oct. 12
Atlantic	May 10	Oct. 11	Elkader	May 11	Sep. 26	Lenox	May 10	Oct. 12	Sigourney	May 3	Oct. 12
Audubon	May 10	Sep. 27	Elliott	May 10	Oct. 11	Leon	May 10	Oct. 12	Sioux Center	May 10	Oct. 11
Baxter	May 4	Oct. 12	Elma	May 16		Little Sioux	May 10	Oct. 12	Sioux City	May 10	Oct. 12
Bedford	May 10	Oct. 11	Estherville	May 16	Oct. 12	Logan	May 10	Oct. 12	Stockport	May 3	Oct. 12
Belle Plaine	May 10	Oct. 12	Fairfield	May 3	Oct. 12	Marshalltown	May 10	Oct. 12	Storm Lake	May 3	Oct. 11
Bloomfield	May 3	Oct. 12	Fayette	May 11	Oct. 1	Mason City	May 10	Oct. 12	Thurman	May 10	Oct. 12
Bonepart	May 3	Oct. 12	Forest City	May 10	Oct. 12	Massena	May 10	Oct. 12	Tipton	May 3	Oct. 12
Boone	May 3	Oct. 12	Fort Dodge	May 10	Oct. 12	Mt. Ayr	May 10	Oct. 12	Toledo	May 10	Sep. 27
Britt	May 10	Oct. 11	Grand Meadow	May 10	Oct. 12	Mt. Pleasant	May 3	Oct. 12	Wapello	May 3	Oct. 12
Burlington	May 3	Oct. 12	Greene	May 10	Oct. 12	New Hampton	May 4	Oct. 12	Washington	May 3	Oct. 12
Carroll	May 10	Oct. 11	Grinnell	May 4	Oct. 12	Newton	May 3	Oct. 12	Washta	May 16	Sep. 25
Cedar Rapids	May 4	Oct. 12	Grundy Center	May 10	Sep. 30	Northwood	May 10	Oct. 12	Waterloo	May 10	Oct. 12
Chariton	May 10	Oct. 12	Guthrie Center	May 10	Oct. 12	Odebolt	May 10	Oct. 12	Waukee	May 10	Oct. 12
Charles City	May 3	Oct. 12	Hampton	May 4	Oct. 11	Olin	May 3	Sep. 25	Waverly	May 10	Oct. 11
Clarinda	May 10	Oct. 12	Hancock	May 3	Oct. 11	Omaha, Neb.	May 2	Oct. 12	Webster City	May 10	Oct. 12
Clear Lake	May 3	Oct. 11	Harlan	May 10	Oct. 11	Onawa	May 10	Oct. 12	West Bend	May 10	Oct. 11
Clinton	May 2	Sep. 30	Hopeville	May 2	Oct. 11	Osage	May 10	Oct. 12	Whitten	May 10	Oct. 12
Columbus Junct.	May 3	Oct. 13	Humboldt	May 10	Sep. 27	Oskaloosa	May 10	Oct. 12	Wilton Junction	May 11	Oct. 12
Corning	May 10	Oct. 12	Independence	May 10	Oct. 13	Pacific Junct'n	May 10	Oct. 12	Winterset	May 10	Oct. 12
Corydon	May 1	Oct. 13	Indianola	May 3	Oct. 12	Pella	May 10	Sep. 27	Woodburn	May 10	Oct. 12
Creston	May 11	Oct. 12	Inwood	May 16	Oct. 12	Perry	May 10	Oct. 11	Zearing	May 10	Sep. 27
Davenport	May 3	Oct. 13	Iowa City	May 3	Oct. 12	Plover	May 10	Oct. 11			

CLIMATE AND CROP REVIEW

CROP SEASON OF 1909.

From a climatic standpoint, 1909, was, in many respects, a year of extremes and gave many adverse conditions to the agriculturist, especially during the planting, growing and harvesting season.

During January, the temperature and precipitation were above the normal, although seasonable temperature prevailed during the first half and the last three days of the Month. The coldest day was the 6th, when the minimum temperature ranged from 10° below zero in the southern counties to 25° below zero in several of the northern counties. From the 13th to the 28th the weather was unseasonably warm, especially on the 23d, when the highest temperature ever recorded in January occurred at several stations in the southeastern part of the State. There was considerably more precipitation than normal, notwithstanding the fact that but little moisture fell prior to the 28th. Light rain began on the 28th, increasing to heavy rain in the evening, and turning to snow during the night. The storm was attended by extremely high northwest winds, which continued from the night of the 28th to the morning of the 30th, making it one of the worst blizzards experienced in this section for many years. The high winds caused the snow to drift badly, and blew down hundreds of windmills and thousands of telegraph and telephone poles. All street car and railroad train service was practically abandoned, and many head of live stock perished from cold and exposure. The storm was so fierce that live stock would not face the wind and flying snow to seek shelter. The maximum velocity of the wind, during the storm, ranged from 31 miles an hour at Dubuque to 72 miles per hour at Sioux City, and was probably higher on the prairies.

February was much warmer than usual, except over the northwestern counties, where the temperature was below zero on several days, and the monthly minimum ranged from 18° to 26° below zero; but over the larger part of the State the month was very mild, many stations reporting a monthly minimum temperature above zero. It was the first time in 27 years that sub-zero temperatures were not recorded during February at Des Moines and Dubuque. The worst storm of the month was on the 9th, when the second severe blizzard of the winter occurred. This storm was especially severe in the northwestern counties, where the snowfall was heavy and the wind velocity was over 50 miles an hour. The snow drifted badly and caused a complete suspension of all railroad and street car traffic. Many deep snow drifts, caused by the storm, were still visible in the northern counties at the close of the month. Another storm with blizzard characteristics occurred on the 14th, but was not heavy enough to cause much damage except to again fill up the cuts that had been shoveled through the drifts caused by the previous storm. The alternating thawing and freezing weather was not favorable to fall grains, clover and alfalfa.

The first six days of March were mild and pleasant, but most of the remainder of the month was cold with frequent snow and rain storms, accompanied by thunder and lightning and brisk to high winds. The snowfall in the central and northern counties was exceptionally heavy, and exceeded all previous records for March at several stations. The low temperatures also broke all former records for the second decade of the month in the north central counties, and the severity of the thunder during the snow storm on the 9th was phenomenal. The 23d was the warmest day of the month, when the maximum temperatures ranged from 45° in the northern to 71° in the southern counties. The lowest temperature for the month at all stations was recorded on the 17th and was generally below zero in the northern districts; the lowest being 15° below zero. The average precipitation for the State was slightly below the normal for March, but the average snowfall was considerably above the normal and was excessive in many localities. There was good sleighing from five to ten days in the northern districts, which was unusual for that time of the year. There had not been sufficient growth at the close of the month to determine whether or not the alternating freezing and thawing weather during the winter had been injurious to clover, winter grains and alfalfa.

April was abnormally cold and cloudy with an excessive amount of precipitation in all but the extreme western counties where there was a slight deficiency. Freezing temperatures occurred in all districts every week during April, and the month closed with the temperature at freezing or below in all parts of the State; but the average temperature for the month was 2.3° higher than the average for April, 1907, which was the coldest April on record and the only one colder than April, 1909. The precipitation, like the cold, was almost continuous, there being at least a trace of rain or snow in some part of the State on every day during the month, and the average snowfall was greater than the average of any preceding April since 1896. Thunder storms accompanied by hail and wind squalls were frequent, and, in many cases, were quite destructive to property. Under the adverse conditions, field work was retarded and was, at the close of the month, about two weeks behind the average of former years. Field work was especially backward in the east central and southeastern districts, where rain or snow fell almost daily from the 12th to the 30th, and the seeding of oats in those districts was only about three-fourths finished at the close of the month. A large acreage intended for oats was abandoned in all parts of the State, thereby reducing the acreage of that crop 6 per cent. below the acreage of 1908. The acreage of wheat was, however, increased. Wheat and early sown oats were up at the close of the month, but growing very slowly on account of the frequent freezing weather. No blossoms appeared on fruit trees except in the extreme southern counties, which was considered to be a favorable indication for a good fruit crop.

The cool wave that spread over the State at the close of April continued during the first three days of May, and caused freezing temperatures on one or more of these days in all parts of the State, and was attended, on the first day by snow flurries over the central and northern counties. The average temperature for the month was considerably below the normal and was the coldest for May, with one exception, 1907, since 1893. The precipitation for the State at large was slightly below the normal, but there was a slight excess over three northern tiers of counties. On the whole, the month was favorable for farm operations and good progress was made in field work. Corn was practically all planted by the close of the month, except on low and wet ground, and cultivation was general. Grass and small grain made rapid growth during the latter half of the month, and was nearly up to the average for the last of May. The continued cold weather during April and the fore part of May kept the fruit buds dormant until the middle of the month, thereby escaping any material damage by the late frosts. The average date for all kinds of fruit trees to be in full bloom at Des Moines is about May 5th, but they were not in full bloom this year until the 16th.

The average temperature for June was only a fraction of a degree above the normal, but the rainfall was considerably above the average for June. There was an excess of rainfall in all districts of the State, the greatest excess being over Union and the adjacent counties, where the monthly amounts ranged from 8 inches to over 13 inches. It was also heavy over the Missouri Divide and the extreme northwestern counties. Showers occurred at some station of the State on every day of the month except the 19th and yet there were, on an average, 12 clear days. Thunder and lightning accompanied most of the showers, but wind squalls and severe hail storms were not as frequent as usual. The frequent and excessive rains caused high water in all rivers and creeks, especially in the western district. The flat and bottom lands were flooded two or three times, and a large acreage of corn was finally abandoned after being replanted once or twice. The surplus moisture also interferred with the cultivation of corn on ground not thoroughly drained and many fields were quite foul; but on high and well drained ground corn made very satisfactory progress and was generally clean. The condition of small grain, grass, potatoes and garden truck improved during the month, but there was a decline in the condition of fruit.

During July showers were heavy and frequent from the 2d to the 12th, and the temperature was unusually low from the 3d to the 7th; but as a whole July was one of the best harvest months on record. The latter half of the month was characterized by moderately warm weather, light and widely scattered showers, a high percentage of sunshine and the rarity of thunder storms and wind squalls. The rainfall was especially heavy over the southern, central and western districts during the first decade, and caused high water in all creeks and rivers within the area of heavy rainfall. Bottom lands were flooded for the third time during the year and many thousand acres had to be abandoned. The heavy rains also prevented haying, and in the southern districts, where the small grain was ready for the harvester, the ground was too wet and soft to run machinery. After the 12th the weather changed suddenly from wet and cool to comparatively dry and warm. During the second decade much of the belated corn was given some cultivation; but owing to its rapid growth, due to the higher temperature, the stalks soon became too high to permit further cultivation and many fields were laid by in a weedy condition. The third decade was the warmest part of the month, the 29th being the warmest day, when the maximum temperatures ranged generally from 90° to over 100°. During this period the showers continued light and scattered, and at the close of the month the surface of the ground was dry over the larger part of the State, and the crops in the eastern districts were beginning to feel the effects of the drouth. Exceptionally rapid progress was made during the latter half of the month in haying and harvesting, and most of the hay and grain crops were secured in excellent condition. Clover made rapid advancement, and nearly all of the early planted fields were in full tassel and earing nicely at the close of the month, and the late planted fields were improving. Some threshing was done before the close of the month. Pastures and potatoes were still in good condition at the end of the month, but they, as well as corn were needing more rain.

August, 1909, will be noted for its uniformly high temperature, the small number of cloudy days, and, over the larger part of the State, the small amount of rainfall. Both the day and the night temperatures were high until the 28th, when a cool wave passed over the State, resulting in light frosts on low ground on the morning of the 29th over the northern and, in a few localities, in southern districts, but no damage was done to vegetation. The maximum temperatures were up to or above 90° on ten days in northern and twenty-one days in southern counties, and the average of the monthly maximum temperatures was 96°. The rainfall was deficient in all but the northeast and extreme north central counties; yet at least a trace of rain fell in some part of the State on every day of the month except the 19th and 20th. During the second decade, showers were frequent and the rainfall heavy over the northeast and north central districts; but over the remainder of the State, the showers were extremely local, and the rainfall generally very light. The monthly rainfall ranged from a trace in Jefferson County to 8.21 inches in Chickasaw county. Drouthy conditions prevailed during the entire month over the southern half of the State, and the condition of the corn crop deteriorated from 10 to 25 per cent; but the early planted corn, on rich soil and well cultivated fields, withstood the drouth remarkably well and much of it was well up to the average of past years at the close of the month. The dry, cloudless weather was, however, favorable for stacking and threshing grain, and that work progressed rapidly. Shock threshing was practically completed at the close of the month.

The hot and drouthy conditions prevailing at the close of August were broken by lower temperatures on the 1st and copious and general showers on the 2d of September. The average temperature was below normal, but the maximum temperatures ranged from 80° to 87° over the northern, and from 85° to 94° over the southern districts, between the 9th and 13th and from the 17th to the 21st. The lowest temperature occurred on the 27th, when the minimum was below the freezing point at several stations in the northern counties. Light frost occurred on low ground in the extreme northern part of the State on the 1st and 5th and in all parts of the State on the 23d, 24th and 27th. On the 27th the frost was heavy on low ground over the northern and northeastern counties, but little or no damage was done except to tender vines. The rains during the first half of the month revived the pastures and softened the ground sufficiently to permit fall plowing to be resumed, and excellent progress was made in plowing and seeding fall grains during the remainder of the month. The rains were beneficial to the late planted corn and the dry weather during the last six days caused the early corn to mature rapidly, and nearly 90 per cent of the crop was beyond danger of frost by the end of the month. High winds on the 12th did much damage in blowing down and breaking corn stalks. The yield of potatoes and the second crop of hay were light on account of the August drought.

The mean temperature for October was slightly below the normal, the average daily deficiency being 2.2°. During the past 19 years there have been five colder Octobers, but there are no records of as low temperature during the first 15 days of October as was registered during that period in October, 1909, when the minimum temperature ranged from 10° to 20° over the northern and from 15° to 23° over the southern counties. The ground was frozen to such an extent that potatoes remaining in the ground were considerably damaged. Cabbage and turnips were also injured, and, over the southern portion of the State, many thousand bushels of apples were frozen on the trees. The precipitation, while below the normal for the month, was general from the 8th to the 12th, and the rainfall was mixed with light snow flurries on the 11th and 12th, which is much earlier than usual for the first snow of the season. Rains were also general between the 19th and the 23d and on the afternoon and evening of the 31st. Fall plowing was continued and the growth of winter grains was satisfactory. Corn husking was begun about the middle of the month, but, owing to the excessive amount of moisture in the cob, it could not be cribbed in large quantities.

November, 1909, will go on record as having been the wettest and one of the warmest Novembers since State-wide observations began in 1890. Both the temperature and precipitation were above the normal at every station in the State, which is unprecedented for that season of the year. The average temperature for the State was 42.4°, which is 6.5° above the normal and the highest average for November during the past 19 years, except in 1899, when the average was 43.9°. The 4th, 18th and 19th were the only days in the month on which rain or snow did not fall in some part of the State. The heaviest precipitation occurred between the 11th and 16th, and the monthly amounts exceeded all former records for November. The amounts of snowfall over the northern counties also exceeded all November records; the monthly amounts ranged from 8 inches to 29.5 inches in the northern district. The frequent and heavy rains and the frostless weather caused high water in all rivers and creeks, many of which, especially in the central and western districts, were at flood stage and overflowed the bottom lands, which is an unusual condition for November. The rains interfered with the corn harvest and made the roads so muddy that they were almost impassable. Much of the corn way lying on the ground and the grain was seriously damaged by the excessive moisture. From 35 to 40 per cent of the corn crop was still in the fields at the end of the month. Corn in cribs was surcharged with moisture, and the warm, moist weather caused it to mold badly. The excessive rains have, however, been beneficial to grass, alfalfa and fall grains, all of which were in good condition at the close of the month. The rains also assured an abundant water supply for the winter. Fall plowing was still progressing at the close of the month.

December, 1909, will be noted for its low average temperature, excessive cloudiness and the frequency of snow storms. It was the coldest December since State-wide observations began in 1890 and probably the coldest since 1876. The average was 12.1° lower than the average for December, 1908, and 2.9° lower than that for any other December since 1890. At many stations, the minimum temperature was below zero on a greater number of days than ever before recorded during the month of December. The average precipitation was .99 inch above the normal and has been exceeded in December only twice during the past 20 years. Rains were general from the 1st to the 3d or 4th, but after the latter date snowstorms were of frequent occurrence. The amounts were generally small, except on the 24th-25th, when about 12 inches fell over the central and east central districts. The average total snowfall for the State was 13.7 inches, and the ground was covered with snow from the 3d in the northern and from the 5th in the southern and eastern districts until the close of the month. There was more good sleighing than for many years so early in the winter. The snow has afforded good protection to winter grains, meadows and alfalfa, and they were in excellent condition at the end of the year. The deep snow and the severe cold weather, however, put a stop to all drainage work and prevented the completion of corn husking. About 25 to 30 per cent of the corn was still in the fields on December 31st, and much of it was covered with ice and snow. The heavy snowfall on the 24th-25th, delayed all freight and the Christmas passenger traffic.

COMPARATIVE DATA FOR THE STATE—ANNUAL.

	TEMPERATURE					PRECIPITATION			
	Mean Annual	Highest	Date	Lowest	Date	Annual	Greatest Annual	Least Annual	Average Snow Fall
1890	48.0	110	July 13	-27	January 22	31 28	45.74	16.00	....
1891	47.3	106	August 9	-31	February 4	32.90	49.05	23.48	....
1892	46.6	104	July 11	-38	January 19	36.58	48.77	24.78	31.7
1893	45 7	102	July *13	-36	January 14	27.59	33.27	19.19	36.2
1894	49.7	109	July 26	-37	January 25	21.94	29.81	15.65	18.4
1895	47,2	104	May 28	-33	February 1	26.77	35.25	18.57	25.5
1896	48.6	104	July 3	-20	January 4	37.23	51.60	28.68	19.8
1897	47.9	106	July *23	-30	January 25	26 97	36.18	20.21	38.5
1898	47.7	103	August 20	-25	December 31	31 34	55.47	19.51	38.6
1899	47.5	104	September 6	-40	February 11	28.68	42.06	21.79	23.2
1900	49.3	103	August 3	-27	February 15	34.15	47.33	25.05	26.3
1901	48.9	113	July 22	-31	December 15	24.41	37.69	16.35	37.2
1902	47.7	98	July 30	-31	January 27	43.82	58 80	20.14	27.7
1903	47.2	101	August 24	-27	December 13	35.39	50.53	26.41	19.1
1904	46.3	100	July 17	-32	January 27	28.51	38.93	19.34	30.3
1905	47.2	104	August 11	-41	February 2	36.56	52 26	24.66	37.9
1906	48.4	102	July 21	-32	February 10	31.60	44.34	20.63	32.5
1907	48.0	102	July 5	-31	February 5	31.61	43.90	19.93	24.3
1908	49.5	101	August 3	-18	January 29	35.26	49.98	24.11	20 7
1909	47.6	103	August *15	-26	February *15	40.01	53.48	27.20	46.8

* And other dates.

IOWA CROP REPORT, JUNE 1, 1909.

Acreage of Farm Crops. Estimated Condition of Staple Crops, Fruit and Live Stock.

Reports received June 1st from county and township correspondents of the Iowa Weather and Crop Service show the following results as to the number of acres and average condition of staple farm crops; also the condition of fruit and live stock.

CORN.—The unfavorable conditions that prevailed during March and April prevented the seeding of the usual acreage of small grain and the acreage of corn has thereby increased a little over 5 per cent as compared with the acreage planted in 1908. So the acreage is about 105, and the average condition on June 1st was rated at 94. Last year at corresponding date it was 92 per cent.

WHEAT.—The drouth of last August, September and October prevented the seeding of as large an acreage of winter wheat as was antcipated and the cold wet weather during the early spring months of this year caused a reduction in the acreage of spring wheat of about 2 per cent. The estimated acreage is now, winter wheat 100 and spring wheat 98 and the average condition is 92 and 94 per cent respectively. Last year the estimates were 101 and 100.

OATS.—The acreage of oats is placed at 94 per cent and the average condition 90 per cent. Last year the condition on June 1st was 102 per cent.

RYE.—Acreage seeded, compared with last year, 95 per cent, and the average condition 94 per cent. Last year the condition was 101 per cent.

BARLEY.—Acreage 98; estimated condition 94 per cent as compared with 101 per cent last year.

FLAX.—Area seeded, 97 per cent; condition, 95 per cent.

POTATOES.—Acreage planted, 102 per cent; condition, 96 per cent. Last year condition 98.

MEADOWS.—There has been a reduction of about 2 per cent in area of meadows, the acreage being 98 per cent. The condition 97 per cent as compared was 104 per cent last year. Grass was slow in starting this spring but owing to favorable weather in May the condition is improving rapidly.

Pastures are about 99 per cent in acreage and 97 per cent in condition.

CONDITION OF FRUIT.—*As Compared with an Average Crop.*—Apples, 90 per cent; plums, 92; peaches, 22; grapes, 94; strawberries, 85; raspberries, 90; blackberries, 85; cherries, 82.

CONDITION OF LIVE STOCK.—Cattle, 94 per cent; hogs, 95; horses, 96; sheep, 96; foals, 90; spring pigs, 85.

The acreage of crops cannot be tabulated until the returns of the township assessors are received from all the counties. The complete report of acreage will probably be published in July.

IOWA CROP REPORT, JULY 1, 1909.

Following is a summary of reports received from crop correspondents of the Iowa Weather and Crop Service, showing the estimated condition of staple crops July 1, 1909, as compared with the average condition on that date in past years: Corn, 92 per cent, winter wheat, 96; spring wheat, 95; oats, 91; rye, 96; barley, 94; flax, 94; hay crop, 100; pastures, 103; potatoes, 100; apples, 76; plums, 68; grapes, 85.

Condition July 1, 1908: Corn, 85 per cent; winter wheat, 99; spring wheat, 94; oats, 90; rye, 95; barley, 93; flax, 89; hay crop, 103; pastures, 104; potatoes, 99; apples, 50; plums, 40; grapes, 80.

July 1st average of the past ten years: Corn, 89 per cent, winter wheat, 92; spring wheat, 92; oats, 90; rye, 93; barley, 94; flax, 92; hay crop, 88; pastures, 96; potatoes, 98.

A revised estimate of the area of corn planted this year shows about 102 per cent, or an average increase of 2 per cent, compared with the area planted in 1908, and a decrease of a little over 2 per cent as shown by reports on June 1, 1909, before the heavy rains began.

IOWA CROP REPORT—AUGUST, 1909.

Following is a summary of reports received from crop correspondents of the Iowa Weather and Crop Service, showing the estimated condition of the staple crops August 1, 1909, as compared with the average condition on that date in past years: The condition of corn has improved materially during July over the larger part of the State but there has been a corresponding decrease over large sections of the southern counties, due to the excessive rains during the first ten days of July, so that the average for the State at large is 91 per cent; spring wheat, 92; oats, 92; barley, 87; flax, 93; hay crop, 101.5; pastures, 102; potatoes, 92; apples, 65; and grapes, 80.

The condition on August 1, 1908 was: Corn, 88 per cent; spring wheat, 93; oats, 85; flax, 92; barley, 94; hay crop, 104; pastures, 102; potatoes, 93; apples, 48; gripes, 78.

CROP ACREAGE FOR 1909.

Following is an estimate of the acreage of the staple crops for 1909 based on the reports of crop correspondents of the Iowa Weather and Crop Service, and the acreage for 1908 as shown by the returns of the township assessors: Winter wheat, 133,740 acres; spring wheat, 265,330; corn, 8,213,280; oats, 4,261,410; rye, 49,590; barley, 492,320; tame hay, 3,485,550; wild hay, 886,740; pastures, 8,901,970; flax, 25,520; potatoes, 127,840 acres.

The full report showing the acreage of the various crops by counties, will be found on another page of this report.

IOWA CROPS—FINAL REPORT, 1909.

Final Report for the State—Total Yield of Soil Products—Value of Farm Prices, December 1, 1909.

Following is a summary of reports from crop correspondents of the Iowa Weather and Crop Service and Threshermen, showing the average yield per acre and total yields of staple soil products, and the average prices at the farms or nearest stations, December 1, 1909. The value gained by feeding farm crops for the production of live stock, poultry and dairy products is not taken into consideration in this report.

CORN.—A revised report of the estimated corn acreage, made August 1st, after the heavy rains had ceased, indicated that the area planted this year was 8,213,280, or 186,330 acres less than the estimated acreage planted in 1908. The average yield per acre for the State this year was 32.9 bushels, making a total yield of 269,812,000 bushels. Of this amount about 35 per cent is still in the fields, and a large percentage of the corn in the cribs is in very poor condition. There is no record of corn being in as poor condition on December 1st as it is this year. High winds on September 12th blew much of the crop down, and the excessive rains in November made the ground so soft that it was difficult to get in the fields, and the unusually warm and moist weather has caused much of the corn in cribs to mold and that on the ground to rot. From present indications, much of the corn in the fields will be ruined and lost. The average farm price on December 1st was 51 cents per bushel, making the aggregate value $137,604,120. The total yield last year was 301,873,150 bushels, and the average total yield for the ten preceding years is 301,412,384 bushels.

WHEAT.—Winter wheat, area harvested, 133,748 acres, yield per acre, 20.5 bushels; total yield, 2,739,050 bushels; average price, 92 cents per bushel; total value, $2,519,926. The total yield last year was 1,678,540 bushels and the average total yield for the ten preceding years is 1,161,011 bushels.

Spring Wheat.—Area harvested, 265,339 acres; average yield, 13.6 bushels per acre; total product, 3,608,910 bushels; price per bushel, 90 cents; total value, $3,248,019; aggregate value of wheat, $5,767,945. The total yield last year was 4,968,250 bushels, and the average total yield for the ten preceding years is 10,665,709 bushels.

Oats.—On account of unfavorable weather conditions last spring, oats were planted from two to four weeks later than usual, and as a result the acreage seeded was 170,236 acres less than the area harvested in 1908; but notwithstanding the many adverse conditions, the yield per acre was slightly better and the quality much better than last year. The area harvested was 4,261,414 acres; average yield, 27.4 bushels per acre; total product, 116,557,830 bushels; aggregate value at 35 cents per bushel, $40,795,240. The total yield last year was 112,830,490 bushels, and the average total yield for the ten preceding years is 121,224,606 bushels.

Barley.—Area harvested, 492,327 acres; yield per acre, 21.6 bushels; total product, 10,629,300 bushels; average price, 46 cents per bushel; total value, $4,889,478. The average total yield for the ten preceding years is 13,289,595 bushels.

Rye.—Area harvested, 49,591 acres; average yield, 16.3 bushels per acre; total product, 805,780 bushels; average price, 60 cents per bushel; total value, $483,468. The average total yield for the ten preceding years is 1,301,120 bushels.

Flax.—Area harvested, 25,525 acres; average yield, 10 bushels per acre; total yield, 255,205 bushels; average price, $1.29 per bushel; total value, $329,214. The ten year average is 669,202 bushels.

Potatoes.—Area harvested, 127,841 acres; average yield, 88 bushels; total product, 11,209,950 bushels; average price, 53 cents; total value, $5,941,273.

Hay (Tame.)—Average yield per acre, 1.7 tons; total product, 5,828,580 tons; average farm price, $7.42 per ton; value of crop, $43,248,063.

Hay (Wild).—Yield per acre, 1.4 tons; total product, 1,219,630 tons; average price, $5.90 per ton; total value, $7,195,718.

THE ORIGIN AND THE PURPOSE OF THE MOUNT WEATHER OBSERVATORY.

BY PROF. WILLIS L. MOORE, CHIEF U. S. WEATHER BUREAU.

In 1870 the United States government undertook the important work of forecasting today what kind of weather might reasonably be expected tomorrow. This service, because of its value to the industries of the country, has rapidly grown and we now get reports twice daily of the surface conditions of temperature, moisture, rainfall, wind velocity and direction, and other data from more than two hundred stations in the United States, West Indies, Mexico, Canada and elsewhere.

From this information the forecaster now makes predictions for the coming two days with such success that they are of service to nearly every class of people. But the more accurate this forecasting, and the greater the length of time ahead to which it can be made to apply, the greater is its value—the ideal condition being the forecasting of the type of season to expect together with detailed forecasting from day to day. A knowledge of the type of the coming season will, among other things, tell the farmer what crops to plant, while the daily forecasts advise him in regard to cultivating and harvesting, and when safely to ship. These ideal conditions, however, do not exist at the present time, and can not be had without a great deal more knowledge than we now possess of the interrelations of meteorological phenomena. Forecasting, that practical part of meteorology so valuable to the public, is an art that can improve only as our knowledge of the underlying science is increased, and therefore it seems proper for the government to undertake to add to that knowledge.

Anything so extensive as general meteorological investigations can not be undertaken with much hope of success by an individual, nor is it practical for private institutions to do so, though much of value is constantly appearing from these sources. Many of the needed investigations of storms, for instance, require simultaneous observations, made at different places, and some of them demand for their solution years of continuous work. From these and other similar considerations it is imperative that the Weather Bureau push investigations of this nature as vigorously as possible, and in every way that seems hopeful of success. But from the difficulty and complexity of the problems involved the improvement of the forecasting may be only imperceptibly gradual, just as have been the improvements in every other art and science, but it is certain that this is the only way by which improvements can be made, and it is equally certain that so long as this kind of work is continued the predictions in the future will continue to improve over those of the past.

The possible investigations are very numerous, but in general may be classed under some one of the following heads:

(a) Studies of the atmosphere at the surface of the earth and at various altitudes; determinations of its temperature, moisture content, pressure, state of electrification, direction and magnitude of its movements, its cloudiness, dust content, absorption of light, of heat, and of electric waves, and its various other properties.

(b) Solar investigations; involving a careful measurement of the insolation, or amount of solar energy reaching the earth in a unit of time, the size and distribution of sun spots, faculæ, and prominences; and an especial effort to detect all changes in the registered amounts of solar energy, and a careful effort to refer these changes to their real causes, whether of terrestrial or of solar origin.

(c) Terrestrial magnetism—a study of the regular and of the irregular changes in the magnitude and direction of the earth's magnetic force, in connection with other terrestrial phenomena and with solar activities of all kinds.

(d) Laboratory investigations—the reproduction under controllable conditions of various meteorological phenomena, and experiments that may aid in explaining the origin and laws of weather conditions; also the construction and standardizing of certain apparatus.

Since all these different lines of investigation have a common object—the solution of meteorological problems and the improvement of forecasting—they are, therefore, more or less intimately related and interdependent, and obviously would better be carried on simultaneously, and so far as possible at the same place and under the same general management. The location should be suitable for the various investigations likely to be taken up, and the management should give all possible freedom and encouragement to individual investigators consistent with proper co-ordination and unity of purpose.

The study of the upper air demanding as it does the daily use of kites, requires a location with a high average wind velocity, and one where sometime during every day there is a strong probability of having a wind of at least 8 to 10 miles per hour. It also calls for a location 10 miles or more away from cities and electric light wires, since at such localities the loose wire falling down as a result of some accident to the kites during a storm would be very troublesome and even a source of danger. Besides the surrounding country for 15 to 20 miles should be comparatively open, so that lost kites and their instruments may the more readily be recovered.

The magnetic work also requires a location remote from cities, and from trolley lines, and free from beds of iron ore. The solar work calls for a place away from the smoke and dust of cities and above the haze of valleys; while the needs of the physical laboratory can be met nearly as well at one place as at any other, provided only that it is free from the disturbing jars of heavy traffic.

Obviously, too, it is desirable to have this important part of the Bureau's work done as near as practicable to Washington so that the central office may be in close touch with it.

Mount Weather Observatory, the name of the group of laboratories and observatories where the Weather Bureau is doing this work, well meets these conditions. It is 1,725 feet above sea level, and is located in Virginia, on the top of the Blue Ridge Mountains, some 20 miles south of Harpers Ferry, and 47 miles in a direct line from Washington. It is only 6 miles from Bluemont, the nearest railroad station, and is easily reached from that point along an excellent mountain road. It overlooks to the west the entire Shenandoah Valley from Strasburg to Harpers Ferry, while to the east all that portion of Piedmont Virginia between the Blue Ridge and the Bull Run mountains is in full view. This extensive sweep of valleys, mountains and plains affords rare opportunities for the study of storm formation and action. This location is satisfactory for the physical laboratory, and for the magnetic observatories. For solar work it is as well adapted as any place east of the Rocky Mountains; while for the study of the upper air it is peculiarly well situated, since kite flights can be obtained there almost daily through the entire year.

The ground for this observatory was purchased September 22, 1902, and the contract for the central or administration building let December 20th, of the same year. Since then the observatory has gradually grown both in extent of plant and in scope of work.

At present the administration building at Mount Weather is well equipped with apparatus for determining and automatically registering the atmospheric pressure, direction and velocity of the wind, sunshine, rainfall, temperature, and humidity; in short, it is equipped as a first-class meteorological station, and the data secured are regularly telegraphed to the central office in Washington twice daily and used in all forecasts for this part of the country. Besides this instrumental equipment the administration building contains offices and several living rooms, all well adapted to the needs of the place.

The ærial department is provided with an engine and dynamo, an electrolytic plant for generating the hydrogen used for the balloons, and tanks for containing this gas, a liquid air plant to provide means for standardizing instruments at the low temperatures to which they are subjected at high altitudes, an instrument room where repairs can be made, a room adapted to kite building, a computing and testing room, and a kite storage room. It also has a small half round revolving structure which contains the kite reel, and from which the kites are flown.

Upper air data, as given by the self-registering apparatus carried by the kites, are telegraphed to Washington daily and used in forecasting. These data are also worked up in a very complete form and used in the study of the general movements and condition of the atmosphere, and it is already evident that in this way important information will be obtained.

Two small buildings are devoted to the proper housing of the magnetic apparatus, where the magnetic condition of the earth with all its periodic, its irregular, and its spasmodic changes, whether small or great, mild or violent, are automatically recorded.

The curious tracings are being studied in connection with solar and terrestrial phenomena, and it is practically certain that important relations will be found, though it is difficult to decipher the writings of these delicate magnets.

The physical laboratory is now under roof, but is not sufficiently completed to be of any service.

Solar physics is represented by only a small shelter, but a few feet square, containing a pyrheliometer for measuring the amount and intensity of the solar radiation and the absorption of the earth's atmosphere.

When the physical laboratory is finished and the solar-physical building put up, the Mount Weather Observatory, as contemplated, will be complete. There will then be at this one place, so far as any one locality and its equipment can provide them, facilities for investigating any and every meteorological phenomenon, both directly by observation and indirectly through experimentation. Its purpose is to be the helping friend and not the competing rival of other places, whether public or private, and therefore every investigator engaged in research of importance to the Weather Bureau is invited to come and make use of its facilities for the prosecution of his studies. The whole aim of the observatory is the discovery, no matter how or by whom, of fundamental truths of nature, and of their application to human welfare.— (Bulletin of the Mount Weather Observatory, Volume I.)

TABULATED CROP SUMMARY

Corn	260,812,000 bu.	$137,604,129
Winter Wheat	2,739,050 bu.	2,519,926
Spring Wheat	3,608,910 bu.	3,248,019
Oats	116,557,830 bu.	40,795,240
Rye	805,780 bu.	483,468
Barley	10,629,300 bu.	4,889,475
Flax	255,205 bu.	329,214
Potatoes	11,269,950 bu.	5,941,273
Hay (Tame)	5,828,580 tons	43,248,063
Hay (Wild)	1,219,630 tons	7,195,817
Pastures and Grazing	Estimated	95,000,000
Buckwheat	"	115,000
Sweet Potatoes	"	130,000
Sorghum and Broomcorn	"	180,000
Timothy and Clover seed	"	1,500,000
Alfalfa and Millet	"	535,000
Sweet Corn	"	675,000
Fruit Crops	"	4,000,000
Garden Truck	"	9,000,000
Total		$357,419,615

FINAL CROP REPORT, 1909.

ACREAGE, YIELD PER ACRE AND TOTAL YIELD OF CORN, OATS, BARLEY AND WINTER AND SPRING WHEAT—BY COUNTIES.

Counties	Corn			Oats			Barley			Winter Wheat			Spring Wheat		
	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels
Adair	92,675	30	2,780,000	27,707	21	581,800	4,980	17	84,600	175	17	3,000	3,910	12	46,900
Adams	65,741	26	1,709,000	21,857	25	546,400	1,700	19	32,300	1,550	17	26,350	1,160	12	13,900
Allamakee	40,000	36	1,440,000	31,830	38	1,209,500	13,390	28	374,900	550	18	9,900	675	17	11,500
Appanoose	42,000	26	1,092,000	12,370	28	346,300	100	19	1,900	1,730	18	31,100	410	13	5,300
Audubon	80,330	32	2,570,000	34,410	22	757,000	5,860	14	82,000	25	18	450	4,470	10	44,700
Benton	125,830	38	4,781,000	68,120	32	2,179,800	12,640	17	214,800	55	24	1,300	500	16	8,000
Black Hawk	83,630	35	2,927,000	49,150	34	1,671,100	5,380	30	161,400	12	20	240	160	15	2,400
Boone	100,100	27	2,702,000	52,830	24	1,267,900	1,648	16	26,400	40	19	760	1,507	10	15,100
Bremer	60,370	36	2,173,000	48,190	29	1,397,500	5,900	30	177,000	25	21	520	140	17	2,400
Buchanan	84,770	34	2,882,000	45,860	31	1,421,600	3,420	25	85,500	15	19	280	210	17	3,600
Buena Vista	96,720	34	3,288,000	71,620	28	2,005,300	1,295	22	28,400	40	16	640	1,920	12	23,000
Butler	96,230	32	3,079,000	65,040	26	1,691,000	3,140	21	65,900	25	18	450	180	13	2,300
Calhoun	93,720	27	2,530,000	67,670	23	1,556,400	1,920	22	42,200	60	20	1,200	380	11	4,200
Carroll	103,070	34	3,504,000	57,730	26	1,500,900	5,500	12	66,000	120	20	2,400	6,100	13	79,300
Cass	96,350	33	3,289,000	35,440	27	956,800	2,930	25	73,200	2,140	21	44,900	8,560	14	119,800
Cedar	87,530	36	3,151,000	30,730	35	1,075,500	18,340	19	348,400	630	24	15,100	890	18	16,000
Cerro Gordo	81,900	34	2,784,000	67,350	22	1,481,700	2,160	22	47,500	35	21	730	197	15	2,900
Cherokee	102,270	33	3,374,000	67,220	27	1,814,900	5,400	16	86,400	40	18	720	1,180	13	15,300
Chickasaw	61,000	33	2,013,000	59,340	23	1,364,800	5,800	27	156,600	45	20	900	800	15	12,000
Clarke	47,650	20	953,000	14,720	25	368,000	850	19	16,100	1,240	14	17,400	180	14	2,500
Clay	66,590	34	2,264,000	60,310	27	1,628,300	1,110	22	24,400	80	18	1,400	425	13	5,500
Clayton	71,800	37	2,656,000	57,040	28	1,597,100	18,460	18	332,200	750	20	15,000	880	22	19,400
Clinton	109,360	37	4,046,000	37,920	32	1,213,400	10,810	25	270,200	580	23	13,300	1,390	16	22,200
Crawford	133,900	35	4,686,000	57,590	27	1,554,930	8,260	24	198,200	370	26	9,600	11,470	13	149,100
Dallas	112,200	33	3,702,000	45,280	29	1,313,100	1,360	17	23,100	1,500	20	30,000	1,880	13	24,400
Davis	53,900	28	1,509,000	19,380	34	658,900	100	20	2,000	2,040	19	38,800	70	15	1,050
Decatur	54,720	18	984,000	23,490	22	516,700	35	18	600	2,780	15	41,700	20	13	260
Delaware	82,270	35	2,879,000	37,930	29	1,099,900	14,400	17	244,800	40	21	840	190	18	3,400
Des Moines	56,920	32	1,821,000	27,960	31	866,700	830	29	24,000	4,300	21	90,300	35	16	500

ACREAGE YIELD PER ACRE AND TOTAL YIELD BY COUNTIES—CONTINUED.

Counties	Corn			Oats			Barley			Winter Wheat			Spring Wheat		
	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels
Dickinson	39,100	26	1,016,050	36,000	20	720,000	2,650	17	45,000	60	14	840	720	15	8,700
Dubuque	65,760	36	2,367,000	43,250	40	1,730,000	6,700	25	167,500	170	19	3,200	730	17	12,400
Emmet	45,600	29	1,322,000	37,890	22	833,500	1,080	20	21,600	....	....	....	500	16	8,000
Fayette	87,520	36	3,150,000	61,720	32	1,975,000	13,399	21	281,200	200	24	4,800	680	19	12,900
Floyd	72,500	33	2,392,000	69,820	22	1,536,000	2,380	21	50,000	95	18	1,700	380	14	5,300
Franklin	90,130	35	3,154,000	67,460	29	2,056,300	2,550	21	53,500	35	24	810	715	12	8,600
Fremont	121,230	35	4,243,000	11,420	25	285,500	125	15	1,900	2,250	24	54,000	2,140	18	38,500
Greene	102,200	28	2,861,000	50,900	25	1,272,500	2,120	20	42,400	15	18	300	370	12	4,400
Grundy	88,650	36	3,280,000	66,960	30	2,008,800	7,650	20	153,000	30	22	660	540	22	11,800
Guthrie	69,100	28	1,934,000	32,530	23	748,200	1,910	19	36,300	630	22	13,860	7,320	10	73,200
Hamilton	105,830	29	3,069,000	63,200	25	1,580,000	870	22	19,100	430	22	9,400	1,530	15	22,900
Hancock	68,450	34	2,327,000	65,750	23	1,512,200	2,150	21	45,100	25	18	450	1,140	16	18,200
Hardin	98,800	35	3,458,000	61,130	29	1,772,700	2,120	30	63,600	105	22	2,310	2,030	16	32,500
Harrison	124,550	34	4,234,000	20,600	26	535,600	2,520	22	55,400	6,880	20	137,600	14,900	13	193,700
Henry	75,630	32	2,420,000	26,700	26	694,200	280	24	6,700	1,890	29	54,800	100	16	1,600
Howard	40,480	31	1,254,000	30,900	28	865,200	8,950	28	250,600	20	28	560	575	18	10,300
Humboldt	55,400	34	1,883,000	52,900	30	1,587,000	805	29	23,300	30	18	540	1,890	14	26,400
Ida	85,860	35	3,005,000	40,000	25	1,000,000	1,830	17	31,100	60	19	1,140	1,860	13	24,200
Iowa	90,000	35	3,150,000	38,940	29	1,129,200	2,210	21	46,400	405	23	10,100	2,050	17	34,800
Jackson	58,320	37	2,157,000	22,900	22	503,800	7,085	21	148,700	325	21	6,800	845	18	15,200
Jasper	118,800	33	3,920,000	49,040	28	1,373,100	2,270	18	40,800	700	22	15,400	5,750	15	86,200
Jefferson	59,430	29	1,723,000	25,200	29	730,800	660	22	14,500	2,410	24	57,800	390	16	6,000
Johnson	100,400	36	3,614,000	46,360	30	1,390,800	3,450	28	96,600	655	23	15,100	1,360	17	23,100
Jones	78,140	37	2,891,000	24,630	30	738,900	8,780	24	210,700	40	25	1,000	215	18	3,800
Keokuk	90,300	34	3,070,000	37,000	31	1,147,000	3,050	24	73,200	915	25	22,900	3,350	14	46,900
Kossuth	119,450	33	3,941,000	105,410	26	2,740,600	3,230	25	80,700	80	20	1,600	2,900	17	49,300
Lee	48,780	35	1,707,000	19,100	33	630,300	150	20	3,000	10,600	21	222,600	30	16	480
Linn	96,080	36	3,458,000	45,020	27	1,215,500	3,210	21	67,400	30	23	700	1,000	14	14,000
Louisa	63,570	32	2,034,000	19,890	28	556,900	380	20	7,600	5,110	23	117,500	510	16	8,100
Lucas	53,300	20	1,066,000	16,800	28	470 400	170	19	3,200	1,535	18	27,600	100	15	1,500
Lyon	93,200	32	2,982,000	76,560	26	1,990,500	26,860	25	671,500	30	20	600	1,400	13	18,200
Madison	76,680	29	2,223,000	18,520	22	407,409	4,580	17	77,800	540	20	10,800	1,620	13	21,000
Mahaska	70,900	33	2,339,000	26,200	26	681,200	2,300	23	52,900	590	20	11,800	1,800	15	27,000
Marion	76,000	33	2,508,000	23,430	26	609,100	2,800	22	61,600	1,990	22	43,800	3,690	16	59,000

Marshall	98,500	36	3,546,000	56,800	30	1,704,000	1,490	20	29,800	485	25	12,100	2,145	18	38,600
Mills	85,080	33	2,807,000	12,420	22	273,200	450	21	9,400	2,785	18	50,100	4,550	11	50,000
Mitchell	54,220	33	1,789,000	72,550	30	2,176,500	8,320	25	208,000	20	20	400	540	16	8,600
Monona	121,134	36	4,360,000	27,330	25	683,200	3,400	25	85,000	15,700	21	329,700	11,830	14	165,600
Monroe	25,600	25	640,000	7,100	25	177,500	94	20	1,800	1,130	18	20,300	625	14	8,500
Montgomery	87,500	33	2,887,000	15,240	24	365,700	1,080	25	27,000	4,500	19	85,500	10,690	11	117,500
Muscatine	61,680	37	2,282,000	17,320	31	546,900	9,740	21	204,500	2,550	24	61,200	780	20	16,400
O'Brien	81,270	37	3,006,000	62,530	30	1,875,900	14,500	19	275,500	170	22	3,700	870	12	10,400
Osceola	50,700	34	1,723,000	58,640	27	1,583,200	10,700	20	214,000	10	22	220	320	14	4,500
Page	107,290	33	3,540,000	15,540	26	404,000	1,550	23	35,600	9,680	19	183,900	4,730	12	56,700
Palo Alto	57,700	27	1,557,600	47,500	24	1,140,000	670	25	16,700	....	....	....	390	14	5,400
Plymouth	169,600	38	6,441,000	89,550	27	2,417,800	12,410	18	223,300	2,430	21	51,000	25,250	12	303,000
Pocahontas	82,000	29	2,378,000	75,390	23	1,733,900	770	20	15,400	130	22	2,900	430	16	6,800
Polk	85,400	35	2,989,000	35,600	28	996,800	700	20	14,000	1,600	23	36,800	4,080	15	61,200
Pottawattamie	189,190	34	6,432,000	41,230	28	1,151,400	1,260	22	93,700	2,670	19	50,700	16,440	13	213,700
Poweshiek	93,240	34	3,170,000	38,280	32	1,224,900	4,470	21	93,896	60	19	1,100	2,000	16	32,000
Ringgold	52,200	19	991,000	20,486	24	491,590	170	17	2,900	2,100	15	31,500	130	14	1,800
Sac	109,420	33	3,610,000	64,900	28	1,817,200	6,600	20	132,000	220	22	4,800	840	15	12,600
Scott	67,350	37	2,491,000	19,710	31	611,000	24,720	19	469,600	2,380	20	47,600	2,720	15	40,800
Shelby	118,220	34	4,019,000	38,060	26	989,500	11,280	19	214,300	500	19	9,500	10,320	13	134,100
Sioux	149,280	38	5,671,000	83,130	30	2,493,900	28,070	23	645,600	850	23	19,500	14,450	15	216,700
Story	107,400	34	3,651,000	56,300	29	1,632,700	1,395	25	34,900	500	21	10,500	890	15	13,300
Tama	110,910	36	4,092,000	62,970	31	1,952,000	10,440	20	208,800	60	20	1,200	3,550	15	53,200
Taylor	65,310	23	1,502,000	18,150	28	508,200	1,130	26	29,400	3,900	20	78,000	220	12	2,600
Union	54,440	21	1,143,000	19,220	21	403,600	1,080	20	21,600	600	16	9,600	440	5	2,200
Van Buren	48,000	32	1,536,000	16,830	27	454,400	165	23	3,800	4,030	20	80,600	20	12	240
Wapello	49,850	25	1,246,000	19,540	27	527,560	640	21	13,400	1,796	16	28,700	220	9	1,980
Warren	72,610	26	1,887,000	20,490	28	573,706	1,400	22	30,800	2,320	24	55,700	2,300	11	25,300
Washington	90,920	32	2,909,000	42,970	29	1,246,100	1,340	26	34,800	970	21	20,400	1,080	15	16,200
Wayne	70,580	21	1,482,000	22,770	22	500,900	45	19	900	1,380	16	22,000	40	13	500
Webster	103,050	30	3,091,060	81,610	30	2,448,300	845	25	21,100	90	21	1,900	3,130	15	46,900
Winnebago	45,000	33	1,485,000	37,560	24	901,400	2,740	26	71,200	20	21	400	5,200	16	83,200
Winneshiek	70,000	32	2,240,000	59,710	29	1,731,500	22,900	24	549,600	190	20	3,800	3,140	20	62,800
Woodbury	149,510	38	5,681,000	59,550	25	738,700	8,690	20	173,800	7,725	21	162,200	9,250	11	101,700
Worth	38,120	33	1,257,000	49,000	30	1,470,000	2,880	25	72,000	....	....	....	2,340	20	46,800
Wright	85,440	31	2,618,000	68,790	28	1,925,100	2,135	25	53,400	325	19	9,200	1,550	15	23,200
Total acreage	....	...	....	....	...	....	....	...	....	....	...	....	....	...	....
Average per acre	....	32.9	....	....	27.4	....	....	21.6	....	....	20.5	....	....	13.6	....
Total yield	8,213,280	....	265,812,600	4,261,411	....	116,557,830	492,327	....	10,629,300	133,748	....	2,739,050	265,339	....	3,608,910

Statistics by counties showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly, will be found in part 3, page 93 **of this year book**.

FINAL CROP REPORT—1912.

ACREAGE, YIELD PER ACRE AND TOTAL YIELD OF RYE, FLAX SEED, POTATOES AND TAME AND WILD HAY—BY COUNTIES.

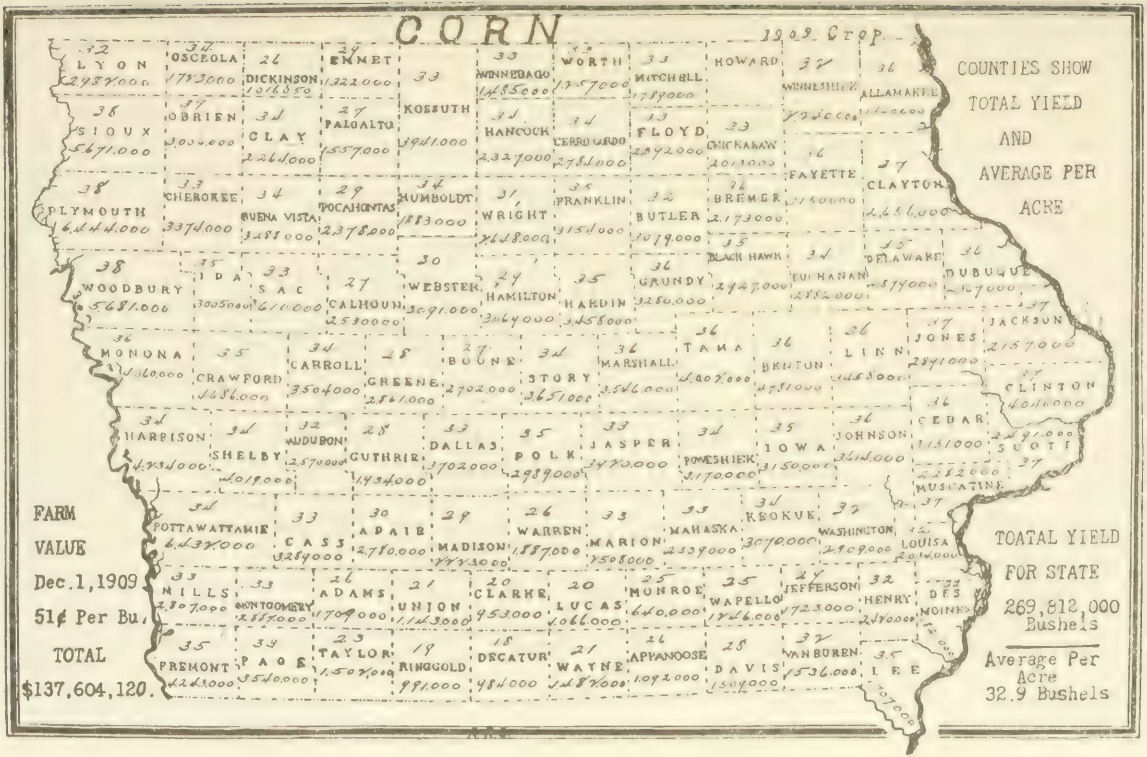
Counties	Rye			Flax Seed			Potatoes			Hay (Tame)			Hay (Wild)			Pastures—Acres
	Acres	Bushels per acre	Total B'sh'ls	Acres	Bushels per acre	Total B'sh'ls	Acres	Bushels per acre	Total Bushels	Acres	Tons per acre	Total Tons	Acres	Tons per acre	Total Tons	
Adair	310	12	3,700	....	..	..	1,034	58	60,000	52,970	1.5	79,400	4,380	1.5	6,500	112,210
Adams	175	16	2,800	....	....	....	520	64	33,300	28,610	1.6	45,700	1,930	1.7	3,200	79,940
Allamakee	490	16	7,800	220	13	2,860	930	100	93,000	45,745	1.6	73,200	4,530	1.5	6,700	107,360
Appanoose	620	13	8,000	....	....	....	410	67	27,500	50,110	1.3	65,100	1,600	1.5	2,400	112,600
Audubon	60	15	900	....	....	....	775	100	77,500	30,450	1.3	39,590	3,300	1.1	3,600	75,250
Benton	740	18	13,300	....	....	....	1,480	85	125,800	47,100	1.5	70,600	6,540	1.2	7,800	108,630
Black Hawk	2,400	17	40,800	....	....	....	2,150	85	182,700	36,140	1.8	65,000	13,700	1.5	20,000	95,280
Boone	241	17	4,100	....	....	....	1,050	63	66,150	22,204	1.2	26,600	17,670	1.2	21,200	73,710
Bremer	830	22	18,200	....	....	....	1,330	82	109,000	18,900	1.9	35,900	25,460	1.3	33,000	71,200
Buchanan	550	19	10,490	....	....	....	1,050	95	99,700	41,110	1.8	74,000	14,290	1.9	27,100	99,980
Buena Vista	35	15	500	275	10	2,750	2,095	80	167,600	22,830	2.2	50,200	17,100	2.0	34,200	68,090
Butler	1,720	14	24,100	50	12	600	1,650	80	132,000	28,800	1.8	51,800	10,850	1.4	15,100	79,450
Calhoun	105	15	1,600	....	....	....	320	106	33,900	16,640	1.9	31,600	16,630	1.4	23,400	65,595
Carroll	160	15	2,400	....	....	....	2,000	70	140,000	25,450	2.0	50,900	13,110	1.5	19,600	75,650
Cass	200	16	3,200	....	....	....	1,270	109	138,400	42,970	2.0	85,900	2,600	2.2	5,700	97,860
Cedar	670	15	10,000	....	....	....	970	78	75,600	49,000	1.9	93,100	300	1.5	400	89,130
Cerro Gordo	260	15	3,900	340	9	3,060	1,720	87	149,600	34,500	1.9	65,500	14,640	1.6	23,400	73,580
Cherokee	15	16	240	30	10	300	1,460	115	167,900	31,890	1.8	57,400	11,650	1.4	16,300	89,390
Chickasaw	270	12	2,900	1,460	11	16,000	1,090	80	87,200	40,140	1.7	68,200	15,890	1.5	22,800	75,390
Clarke	260	16	4,100	....	....	......	385	125	48,100	43,150	1.4	60,400	380	1.0	400	90,280
Clay	40	12	500	410	9	3,700	700	75	52,500	24,600	1.7	41,800	22,010	1.2	26,400	66,770
Clayton	1,560	15	23,400	10	11	110	1,870	130	243,100	56,590	1.9	108,400	3,970	1.2	4,700	137,900
Clinton	1,370	18	24,600	20	12	240	1,185	102	120,800	65,050	1.5	97,600	3,870	1.3	5,000	129,740
Crawford	200	11	2,200	....	....	....	2,250	92	207,000	50,390	2.0	100,700	7,130	1.8	13,300	118,310
Dallas	530	14	7,400	....	....	....	890	68	60,500	29,060	1.7	49,400	6,350	1.8	11,400	103,370
Davis	1,410	15	21,000	....	....	....	400	68	27,200	50,810	1.5	76,200	....	....	....	186,300
Decatur	290	15	4,300	60	9	540	420	27	11,300	39,400	1.4	55,100	620	1.5	900	115,980
Delaware	1,240	16	19,800	50	13	650	1,242	73	100,600	46,900	1.7	79,700	7,830	1.8	14,000	107,500
Des Moines	950	15	14,200	....	....	....	1,090	86	93,700	28,660	1.5	43,000	260	1.5	400	66,590
Dickinson	80	12	1,000	410	12	4,920	530	109	57,700	14,700	1.8	26,100	17,580	1.1	13,300	42,820

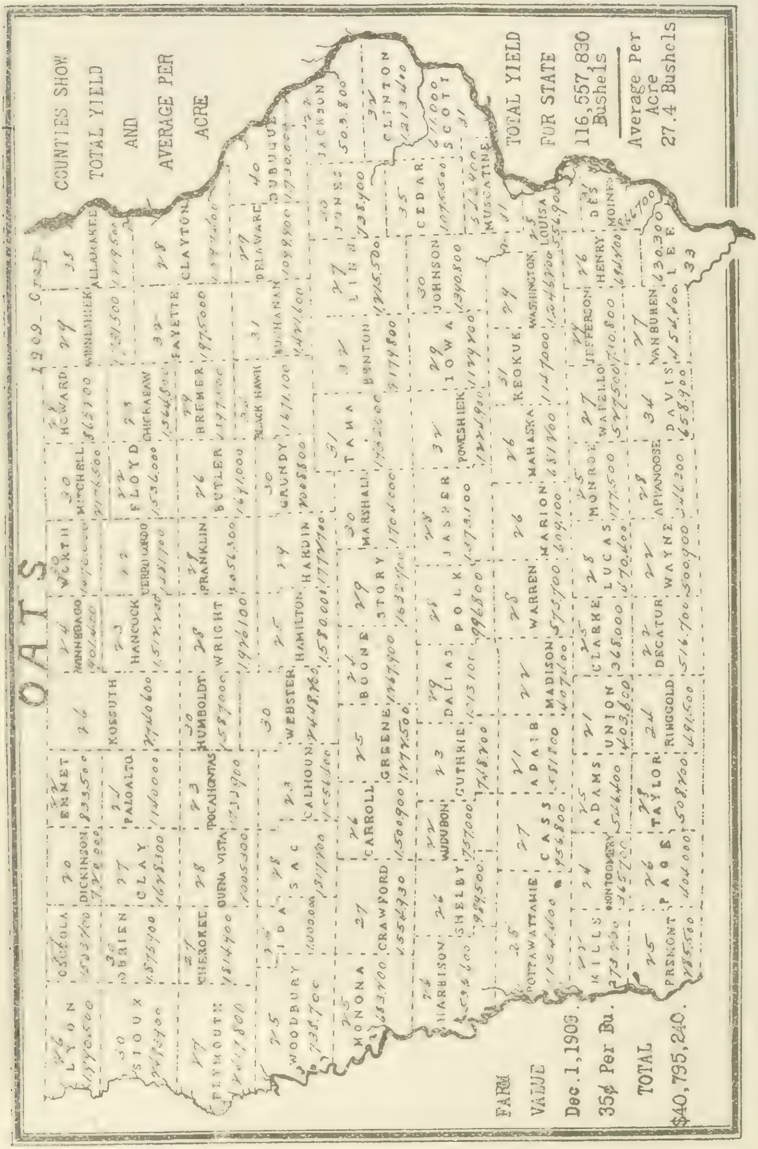
Dubuque	390	16	6,200				1,715	88	150,900	52,050	1.4	72,900	1,380	1.5	2,000	120,520
Emmet	50	15	750	490	10	4,900	530	83	44,000	23,600	1.5	35,400	13,150	1.2	15,700	47,000
Fayette	450	24	10,800	620	10	6,200	2,060	75	154,500	58,170	1.6	93,000	15,700	1.0	15,700	142,680
Floyd	450	17	7,600	840	12	10,000	1,225	85	104,100	32,230	1.8	57,900	6,110	1.4	8,500	63,900
Franklin	140	13	1,800	100	8	800	1,985	90	178,650	26,040	1.6	42,500	15,200	1.0	15,200	77,500
Fremont	230	20	4,600				525	120	63,000	17,590	2.9	55,180	4,130	2.0	8,200	62,350
Greene	70	20	1,400	120	9	1,080	900	86	77,400	22,840	1.7	38,600	13,030	1.5	19,500	57,710
Grundy	40	25	1,000				6,210	103	639,630	27,340	2.0	54,600	8,700	1.5	13,000	69,900
Guthrie	190	15	2,800				610	88	53,680	54,700	1.0	34,700	4,725	1.0	4,700	103,790
Hamilton	90	22	2,000	170	9	1,530	1,600	85	136,000	25,330	1.9	48,100	20,860	1.5	31,300	81,770
Hancock	60	15	900	490	9	4,400	950	122	115,900	20,830	1.7	35,400	19,050	1.5	28,600	66,460
Hardin	115	16	1,800	25	11	270	1,330	160	[illegible]	27,700	1.7	47,100	21,980	1.4	30,700	73,150
Harrison	230	13	3,000				1,280	90	115,200	19,900	1.5	29,800	12,140	1.4	17,000	96,040
Henry	1,030	23	23,700				500	71	35,500	26,410	1.8	47,500	10	1.5	15	83,830
Howard	435	22	9,600	1,170	10	11,700	860	58	49,880	33,520	1.9	63,700	13,700	1.5	20,500	58,140
Humboldt				220	10	2,200	650	103	66,950	23,450	1.5	35,200	18,270	1.1	20,100	59,740
Ida	35	18	630	50	10	500	540	160	86,400	27,550	2.0	55,100	2,430	1.4	3,400	56,740
Iowa	370	15	5,500				1,350	63	85,000	57,540	1.9	109,000	975	1.1	1,000	97,700
Jackson	790	19	15,000				945	110	103,900	60,950	1.9	115,800	1,000	1.8	1,800	149,150
Jasper	765	10	7,600				1,670	49	81,800	50,525	1.3	65,700	1,900	1.2	2,300	133,220
Jefferson	1,250	19	23,700				515	69	35,500	36,870	1.5	55,300	40	1.4	50	93,230
Johnson	1,645	16	26,300				1,680	98	164,600	54,760	1.7	93,000	1,580	1.0	1,580	107,980
Jones	680	14	9,500				640	90	57,600	53,130	2.0	106,200	500	1.5	750	102,660
Keokuk	910	20	18,200				730	100	73,000	46,660	1.8	83,800	450	1.6	720	98,010
Kossuth	35	18	600	1,453	9	13,000	1,710	110	188,100	33,570	1.5	50,300	64,060	1.4	89,700	121,680
Lee	3,290	16	52,600				1,190	61	72,600	38,920	1.9	74,000	100	1.5	150	98,320
Linn	1,250	16	20,000				1,780	100	178,000	32,600	1.6	52,000	5,800	1.2	6,900	110,800
Louisa	2,220	16	35,500				620	70	43,400	19,440	1.6	31,000	660	2.0	1,300	65,950
Lucas	610	16	9,750				430	44	18,900	46,380	1.1	51,000	690	1.0	700	97,040
Lyon	135	15	2,000	180	7	1,260	2,420	80	193,600	19,600	1.5	29,400	11,100	1.0	11,100	55,170
Madison	190	16	3,000				700	66	46,200	40,020	1.7	68,000	1,900	1.2	2,300	124,800
Mahaska	530	17	9,000				775	80	62,000	33,740	1.7	57,300	710	1.5	1,060	72,800
Marion	625	17	10,600				590	75	44,300	38,500	2.0	77,000	700	1.5	1,050	104,560
Marshall	110	18	1,900				2,270	82	186,100	40,880	1.6	65,400	1,380	1.5	2,100	79,000
Mills	70	17	1,200				790	80	63,200	24,430	1.3	31,700	3,640	1.2	4,400	58,780
Mitchell	150	18	2,700	2,900	8	23,200	1,470	120	176,400	34,150	1.9	64,900	2,880	1.5	4,300	59,380
Monona	330	17	5,600	25	9	225	1,540	60	92,400	15,270	2.0	30,500	12,730	1.8	22,900	87,460
Monroe	50	14	700				400	52	20,800	29,590	1.2	35,500	45	0.9	40	77,000
Montgom'y	120	15	1,800				615	110	67,650	28,400	1.8	50,700	900	1.6	1,440	69,880
Muscatine	3,280	15	49,200				2,465	90	221,800	28,670	1.6	45,800	1,480	1.5	2,200	89,000
O'Brien	25	14	350	170	9	1,500	1,166	100	116,600	27,420	1.8	49,300	11,350	1.6	18,100	63,620
Osceola	10	14	140	515	10	5,150	845	116	98,000	23,100	1.6	37,000	10,860	1.5	16,200	39,660
Page	400	16	6,400				840	73	61,300	33,790	2.0	67,600	2,200	2.0	4,400	88,790
Palo Alto	25	12	300	500	12	6,000	900	82	73,800	14,400	1.5	21,600	29,850	1.3	38,800	54,730
Plymouth	130	20	2,600	35	10	350	2,100	100	210,000	23,800	1.8	[illegible]	24,200	1.6	38,700	109,330
Pocahontas	160	11	1,800	910	10	9,100	880	75	[illegible]	17,800	[illegible]	28,400	26,600	1.4	37,200	71,100
Polk	210	19	4,000				2,440	60	146,400	[illegible]	1.3	30,300	5,790	1.2	6,900	70,570
Pot'wat'mie	200	18	3,600				2,940	100	294,000	[illegible]	[illegible]	79,300	10,900	1.4	15,200	122,870
Poweshiek	185	15	2,700				960	100	96,000	40,180	[illegible]	[illegible]	250	1.0	250	110,710
Ringgold	200	16	3,200				350	[illegible]	[illegible]	44,000	1.4	[illegible]	188	1.5	280	108,290

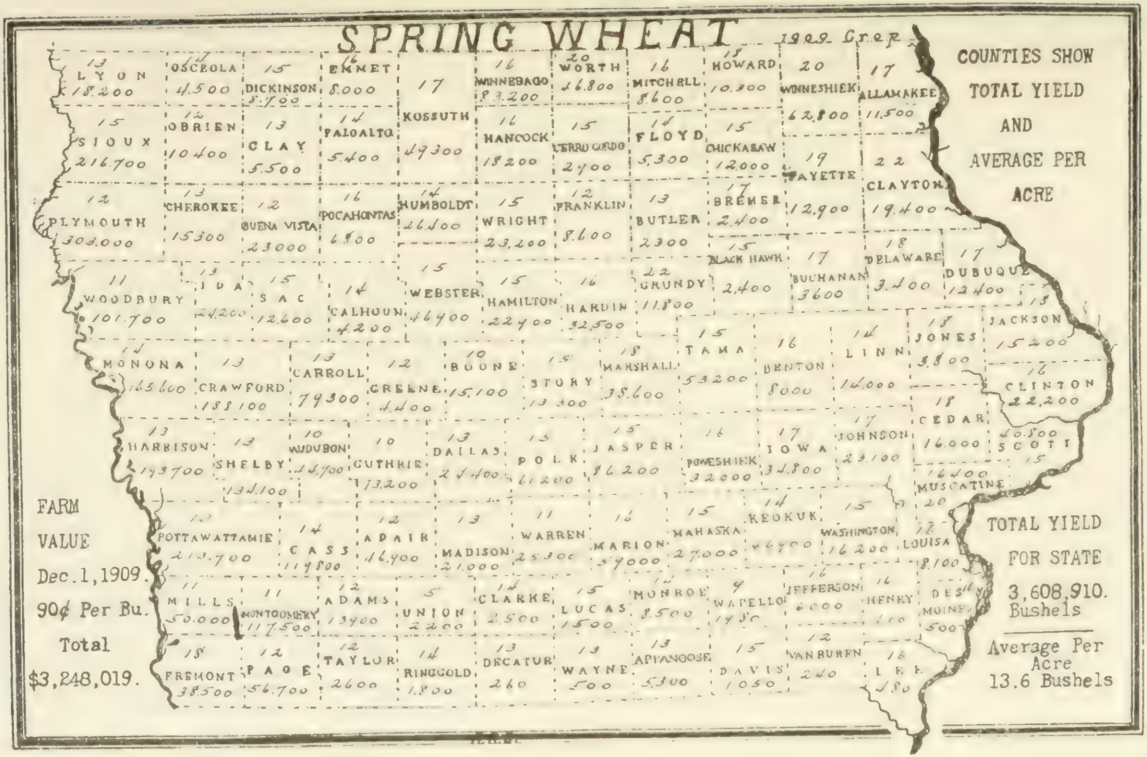
ACREAGE YIELD PER ACRE AND AVERAGE YIELD BY COUNTIES—CONTINUED

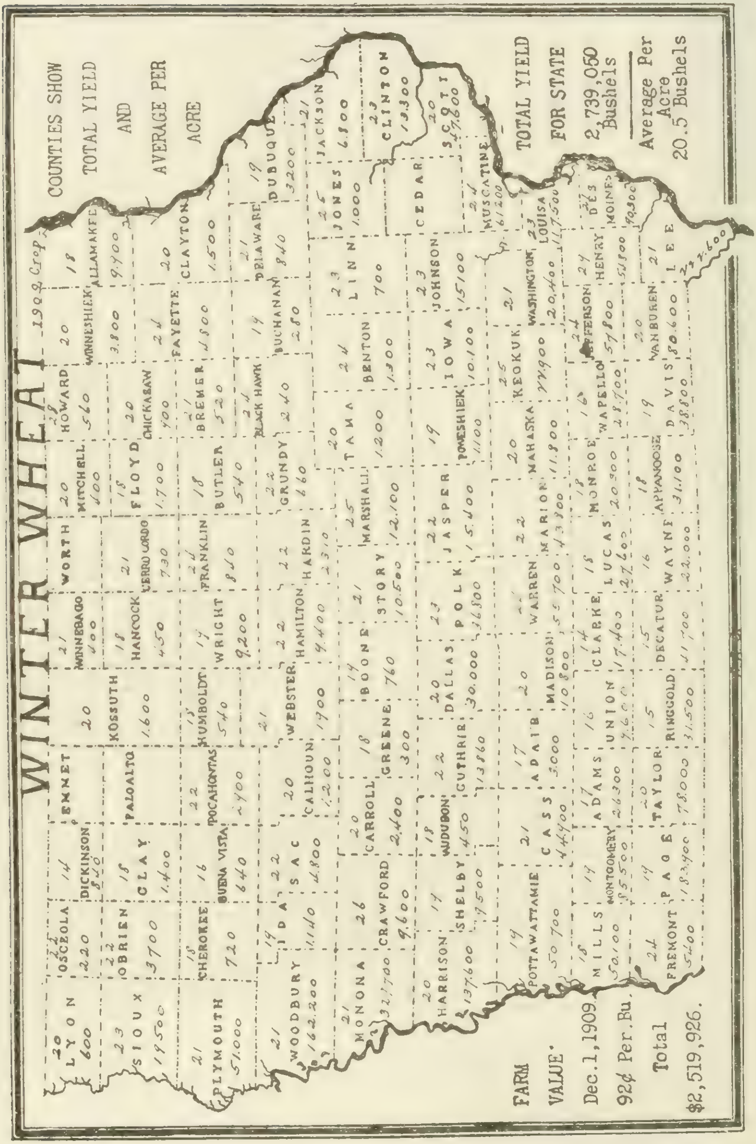
Counties	Rye			Flax Seed			Potatoes			Hay (Tame)			Hay (Wild)			Pastures—Acres
	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total B'sh'ls	Acres	Bushels per acre	Total Bushels	Acres	Tons per acre	Total Tons	Acres	Tons per acre	Total Tons	
Sac	25	16	400	1,400	8	11,200	1,110	102	113,200	28,590	2.0	57,200	13,230	1.8	23,800	75,560
Scott	1,450	14	20,300	20	7	140	8,430	103	868,200	33,500	1.8	60,300	3,710	1.5	5,500	69,600
Shelby	145	14	2,000	85	10	850	1,380	100	138,000	35,880	1.5	53,800	6,480	1.4	9,100	89,120
Sioux	30	21	630	115	10	1,150	1,680	90	151,200	28,850	1.6	46,100	29,800	1.3	27,000	80,800
Story	200	19	3,800				885	85	75,200	27,970	2.0	55,900	11,240	1.5	16,800	72,390
Tama	300	10	3,000				2,760	92	253,900	57,040	1.7	96,900	3,250	1.6	5,200	116,700
Taylor	500	20	10,000				575	65	48,800	40,030	1.5	60,000	900	1.4	1,200	109,080
Union	180	15	2,700				900	25	22,500	40,060	1.9	76,100	900	1.5	1,300	99,700
Van Buren	1,270	14	17,700				320	68	21,700	35,490	1.5	53,200	25	1.5	35	185,450
Wapello	950	17	16,100				1,000	55	55,000	37,000	1.5	55,500	65	1.5	100	87,790
Warren	480	17	8,100				1,100	80	88,000	45,060	1.8	81,100	740	1.4	1,000	109,750
Washington	500	19	9,500				750	62	46,500	12,320	1.7	71,900	140	1.6	220	100,020
Wayne	260	16	4,100	40	8	320	330	57	18,800	60,540	1.4	84,700	100	0.9	90	117,120
Webster	120	14	1,600	390	10	3,900	1,200	95	114,000	22,910	2.0	45,800	27,360	1.6	43,800	92.190
Winnebago	15	17	250	990	11	10,900	865	107	92,500	16,430	1.3	21,300	20,690	1.5	31,000	48,140
Winneshiek	320	19	6,000	3,170	12	38,000	1,190	97	115,400	54,290	2.0	108,600	10,670	1.8	19,200	116,830
Woodbury	130	19	2,400	20	9	180	2,100	68	142,800	28,930	1.9	55,000	16,350	1.7	27,800	98,280
Worth				1,690	10	16,900	630	65	40,900	19,130	1.7	32,500	17,260	1.3	22,400	49,920
Wright	40	16	640	290	9	2,600	1,390	93	129,200	21,920	1.7	42,400	18,340	1.5	27,500	73,410
Total Acreage																
Ave'ge per acre		16.3			10.			88			1.7			1.4		
Total yield	49,591		805,780	25,525		255,205	127,841		11,209,950	3,485,552		5,828,580	866,743		1,219,630	8,901,973

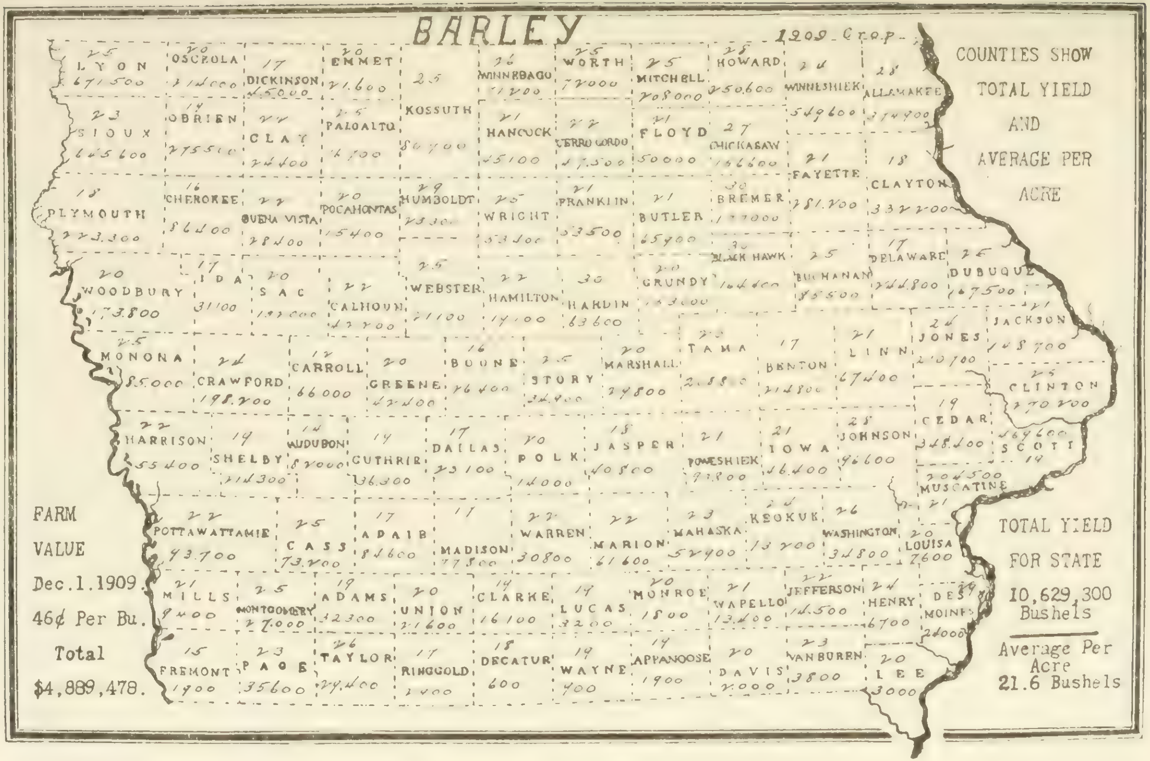
Statistics by counties showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly, will be found in part 3, page 96 of this year book.


CORN
1909 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
32 LYON [illegible]
34 OSCEOLA [illegible]
26 DICKINSON 1016850
29 EMMET 1322000
33 KOSSUTH 3941000
33 WINNEBAGO 1485000
WORTH 1357000
33 MITCHELL 1789000
HOWARD
32 WINNESHIEK [illegible]
36 ALLAMAKEE [illegible]
38 SIOUX 5671000
37 OBRIEN 3000000
34 CLAY 2264000
27 PALOALTO 1557000
34 HANCOCK 2327000
34 CERRO GORDO 2784000
33 FLOYD 2292000
33 CHICKASAW 2013000
36 FAYETTE [illegible]
37 CLAYTON [illegible]
38 PLYMOUTH 6444000
33 CHEROKEE 3374000
34 BUENA VISTA 3288000
29 POCAHONTAS 2378000
34 HUMBOLDT 1883000
31 WRIGHT [illegible]
35 FRANKLIN 3154000
32 BUTLER 3079000
36 BREMER 2173000
38 WOODBURY 5681000
35 IDA 3005000
33 SAC [illegible]
27 CALHOUN 2530000
30 WEBSTER 3091000
24 HAMILTON 3064000
35 HARDIN 3458000
36 GRUNDY 3280000
35 BLACK HAWK [illegible]
34 BUCHANAN 2852000
35 DELAWARE [illegible]
36 DUBUQUE [illegible]
36 MONONA [illegible]
35 CRAWFORD [illegible]
34 CARROLL 3504000
28 GREENE 2861000
27 BOONE 2702000
34 STORY 3651000
36 MARSHALL [illegible]
36 TAMA [illegible]
36 BENTON [illegible]
36 LINN [illegible]
37 JONES 2891000
37 JACKSON 2157000
37 CLINTON [illegible]
34 HARRISON [illegible]
34 SHELBY 4019000
32 AUDUBON 2570000
28 GUTHRIE 1934000
33 DALLAS 3702000
35 POLK 2989000
33 JASPER [illegible]
34 POWESHIEK 3170000
35 IOWA 3150000
36 JOHNSON 3614000
36 CEDAR 3151000
37 SCOTT [illegible]
37 MUSCATINE [illegible]
34 POTTAWATTAMIE [illegible]
33 CASS 3289000
30 ADAIR 2780000
29 MADISON [illegible]
26 WARREN 1887000
33 MARION [illegible]
33 MAHASKA 2339000
34 KEOKUK 3070000
32 WASHINGTON 2909000
LOUISA [illegible]
33 MILLS 2807090
33 MONTGOMERY [illegible]
26 ADAMS 1709000
21 UNION 1143000
20 CLARKE 953000
20 LUCAS 1066000
25 MONROE 640000
25 WAPELLO [illegible]
24 JEFFERSON [illegible]
32 HENRY [illegible]
DES MOINES
35 FREMONT [illegible]
33 PAGE 3540000
23 TAYLOR [illegible]
19 RINGGOLD 991000
18 DECATUR 984000
21 WAYNE [illegible]
26 APPANOOSE 1092000
28 DAVIS 1504000
32 VAN BUREN 1536000
35 LEE [illegible]
FARM VALUE Dec. 1, 1909 51¢ Per Bu. TOTAL $137,604,120.
TOATAL YIELD FOR STATE 269,812,000 Bushels
Average Per Acre 32.9 Bushels


OATS
1909
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 116,557,830 Bushels
Average Per Acre 27.4 Bushels
FARM VALUE Dec. 1, 1909. 35¢ Per Bu. TOTAL $40,795,240.
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
O'BRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
CLINTON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE


SPRING WHEAT
1909 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 3,608,910. Bushels
Average Per Acre 13.6 Bushels
FARM VALUE Dec. 1, 1909. 90¢ Per Bu. Total $3,248,019.
13 LYON 18.200
12 OSCEOLA 4.500
15 DICKINSON 5.700
16 EMMET 8.000
17 KOSSUTH 49300
16 WINNEBAGO 83.200
20 WORTH 46.800
16 MITCHELL 8600
18 HOWARD 10.300
20 WINNESHIEK 62,800
17 ALLAMAKEE 11,500
15 SIOUX 216.700
12 OBRIEN 10400
13 CLAY 5.500
14 PALOALTO 5.400
16 HANCOCK 18200
15 CERRO GORDO 2700
14 FLOYD 5.300
15 CHICKASAW 12000
19 FAYETTE 12,900
22 CLAYTON 19.400
12 PLYMOUTH 303.000
13 CHEROKEE 15300
12 BUENA VISTA 23000
16 POCAHONTAS 6900
14 HUMBOLDT 26.400
15 WRIGHT 23.200
12 FRANKLIN 8.600
13 BUTLER 2300
17 BREMER 2.400
15 BLACK HAWK 2,400
17 BUCHANAN 3600
18 DELAWARE 3.400
17 DUBUQUE 12400
11 WOODBURY 101.700
13 IDA 24200
15 SAC 12.600
14 CALHOUN 4.200
15 WEBSTER 46900
15 HAMILTON 22400
16 HARDIN 32,500
22 GRUNDY 11.800
15 TAMA 53200
16 BENTON 8000
14 LINN 14.000
18 JONES 3.800
13 JACKSON 15200
14 MONONA 165600
13 CRAWFORD 188100
13 CARROLL 79300
12 GREENE 4.400
10 BOONE 15.100
15 STORY 13300
18 MARSHALL 35.600
16 CLINTON 22,200
13 HARRISON 173700
13 SHELBY 134.100
10 AUDUBON 24.700
10 GUTHRIE 73.200
13 DALLAS 24.400
15 POLK 61200
15 JASPER 86200
16 POWESHIEK 32000
17 IOWA 31.800
17 JOHNSON 23.100
18 CEDAR 16.000
40.500 SCOTT 15
16400 MUSCATINE 20
12 POTTAWATTAMIE 213.700
14 CASS 119800
12 ADAIR 16.900
13 MADISON 21.000
11 WARREN 25300
16 MARION 57000
15 MAHASKA 27000
14 KEOKUK 46700
15 WASHINGTON 16200
12 LOUISA 8.100
11 MILLS 50.000
11 MONTGOMERY 117.500
12 ADAMS 13900
5 UNION 2200
14 CLARKE 2.500
15 LUCAS 1500
12 MONROE 8.500
9 WAPELLO 1450
16 JEFFERSON 6000
16 HENRY 110
14 DES MOINES 500
18 FREMONT 38500
12 PAGE 56.700
12 TAYLOR 2600
14 RINGGOLD 1.800
13 DECATUR 260
13 WAYNE 500
13 APPANOOSE 5.300
15 DAVIS 1050
12 VAN BUREN 240
15 LEE 480


WINTER WHEAT 1909 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 2,739,050 Bushels
Average Per Acre 20.5 Bushels
FARM VALUE Dec. 1, 1909. 92¢ Per. Bu. Total $2,519,926.
20 LYON 600
22 OSCEOLA 220
14 DICKINSON 820
EMMET
20 KOSSUTH 1,600
21 WINNEBAGO 100
WORTH
20 MITCHELL 100
22 HOWARD 560
20 WINNESHIEK 3,800
18 ALLAMAKEE 9,700
23 SIOUX 19,500
22 OBRIEN 3700
15 CLAY 1,400
PALOALTO
18 HANCOCK 450
21 CERRO GORDO 730
15 FLOYD 1,700
20 CHICKASAW 900
21 FAYETTE 1,500
20 CLAYTON 1,500
21 PLYMOUTH 51,000
15 CHEROKEE 720
16 BUENA VISTA 640
22 POCAHONTAS 1,900
15 HUMBOLDT 540
17 WRIGHT 9,200
21 FRANKLIN 810
18 BUTLER 540
21 BREMER 520
21 BLACK HAWK 240
19 BUCHANAN 280
21 DELAWARE 840
19 DUBUQUE 3200
21 WOODBURY 162,200
19 IDA 1,140
22 SAC 2,800
20 CALHOUN 1,200
21 WEBSTER 1,900
22 HAMILTON 9,400
22 HARDIN 2,310
22 GRUNDY 660
20 TAMA 1,200
24 BENTON 1,300
23 LINN 700
25 JONES 1,000
21 JACKSON 6,800
23 CLINTON 13,300
21 MONONA 321,700
26 CRAWFORD 9,600
20 CARROLL 2,400
18 GREENE 300
19 BOONE 760
21 STORY 10,500
25 MARSHALL 12,100
23 CEDAR
20 HARRISON 137,600
17 SHELBY 9,500
18 AUDUBON 450
22 GUTHRIE 13,860
20 DALLAS 30,000
23 POLK 36,800
22 JASPER 15,400
19 POWESHIEK 1,100
23 IOWA 10,100
23 JOHNSON 15,100
20 SCOTT 17,800
21 MUSCATINE 6,200
19 POTTAWATTAMIE 50,700
21 CASS 44,900
17 ADAIR 3,000
20 MADISON 10,800
WARREN 55,700
22 MARION 43,800
20 MAHASKA 11,800
25 KEOKUK 77,900
21 WASHINGTON 20,400
23 LOUISA 11,500
18 MILLS 50,100
19 MONTGOMERY 85,500
17 ADAMS 26,300
16 UNION 7,600
14 CLARKE 17,400
15 LUCAS 27,600
18 MONROE 20,900
16 WAPELLO 28,700
24 JEFFERSON 57,800
24 HENRY 51,800
27 DES MOINES 90,300
24 FREMONT 5,400
19 PAGE 183,900
20 TAYLOR 78,000
15 RINGGOLD 31,500
15 DECATUR 11,700
16 WAYNE 22,000
18 APPANOOSE 31,100
19 DAVIS 38,800
20 VAN BUREN 80,600
21 LEE 232,600



BARLEY

1909 Crop

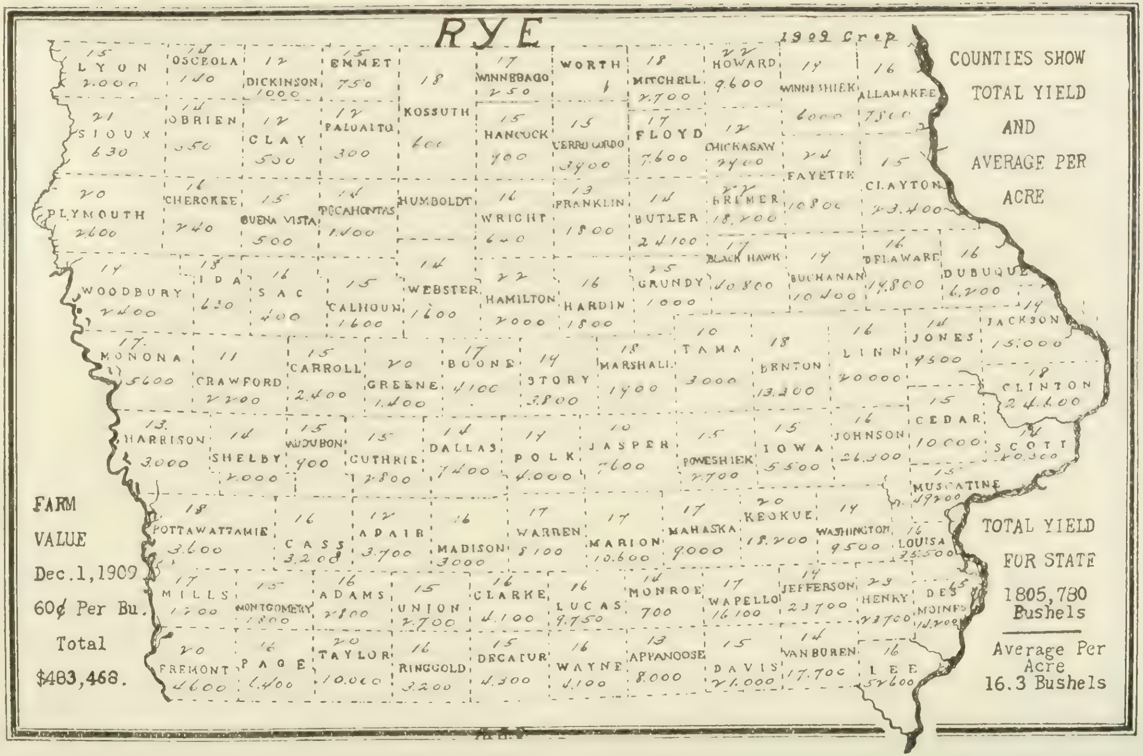
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE

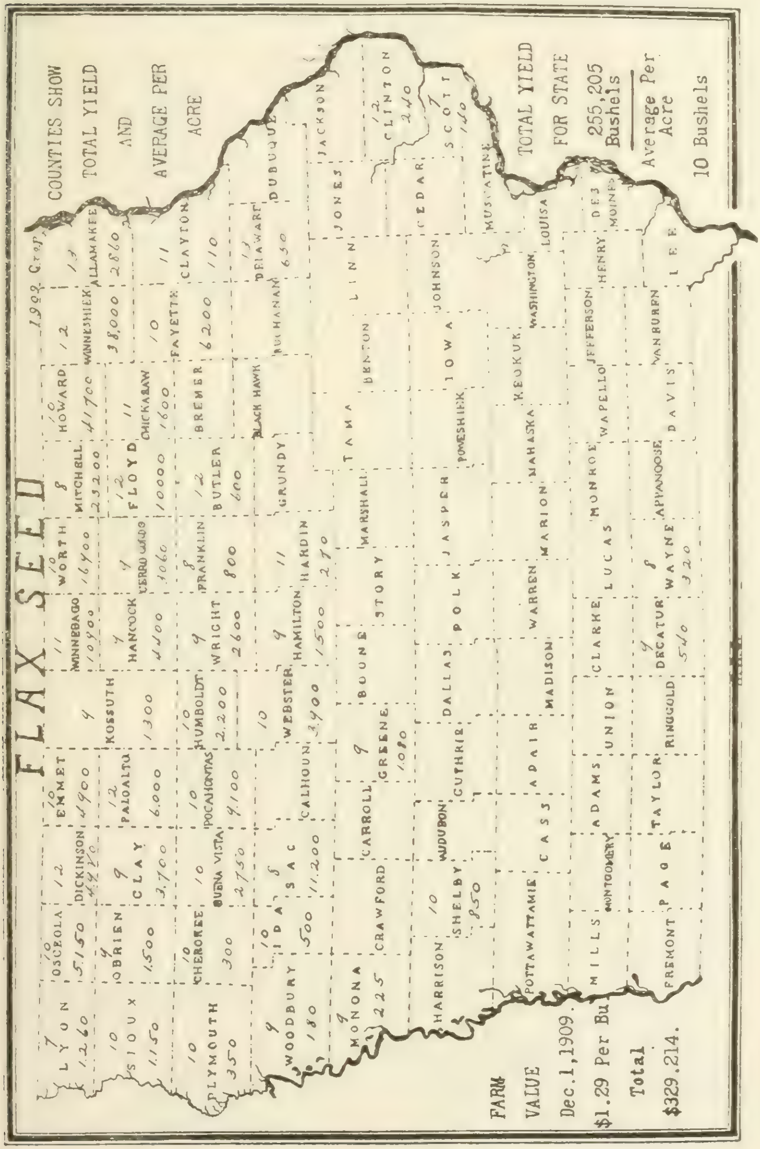
25 LYON 671500
20 OSCEOLA 214000
17 DICKINSON 45000
20 EMMET 21.600
25 KOSSUTH 86700
26 WINNEBAGO 21200
25 WORTH 72000
25 MITCHELL 208000
25 HOWARD 250.600
24 WINNESHIEK 549600
28 ALLAMAKEE 314900
23 SIOUX 645600
14 OBRIEN 275500
24 CLAY 24400
25 PALOALTO 4700
21 HANCOCK 45100
22 CERRO GORDO 47.500
21 FLOYD 50000
27 CHICKASAW 166600
21 FAYETTE 281.200
18 CLAYTON 332200
18 PLYMOUTH 223.300
16 CHEROKEE 86400
22 BUENA VISTA 28400
20 POCAHONTAS 15400
29 HUMBOLDT 2330
25 WRIGHT 53400
21 FRANKLIN 33500
21 BUTLER 65900
30 BREMER 177000
30 BLACK HAWK 164400
25 BUCHANAN 85500
17 DELAWARE 244.800
26 DUBUQUE 167500
20 WOODBURY 173.800
17 IDA 31100
20 SAC 192000
22 CALHOUN 42200
25 WEBSTER 21100
22 HAMILTON 17100
30 HARDIN 63600
20 GRUNDY 143600
25 MONONA 85.000
24 CRAWFORD 198.200
12 CARROLL 66000
20 GREENE 42400
16 BOONE 26400
25 STORY 34.400
20 MARSHALL 29800
22 TAMA 28800
17 BENTON 214800
21 LINN 67400
24 JONES 210700
21 JACKSON 148700
25 CLINTON 270200
22 HARRISON 55400
19 SHELBY 214300
14 AUDUBON 82000
14 GUTHRIE 36.300
17 DALLAS 23100
20 POLK 14000
15 JASPER 40800
21 POWESHIEK 92.800
21 IOWA 46.400
28 JOHNSON 96600
19 CEDAR 248.400
19 SCOTT 469600
21 MUSCATINE 204500
22 POTTAWATTAMIE 43.700
25 CASS 73.200
17 ADAIR 84600
11 MADISON 77500
22 WARREN 30800
22 MARION 61600
23 MAHASKA 52900
24 KEOKUK 13200
26 WASHINGTON 34800
20 LOUISA 7600
21 MILLS 9400
25 MONTGOMERY 27.000
19 ADAMS 12300
20 UNION 21600
14 CLARKE 16100
14 LUCAS 3200
20 MONROE 1800
21 WAPELLO 13.400
22 JEFFERSON 14.500
24 HENRY 6700
19 DES MOINES 24000
15 FREMONT 1900
23 PAGE 35600
26 TAYLOR 29.400
17 RINGGOLD 2400
18 DECATUR 600
19 WAYNE 400
14 APPANOOSE 1900
20 DAVIS 2000
23 VANBUREN 3800
20 LEE 3000

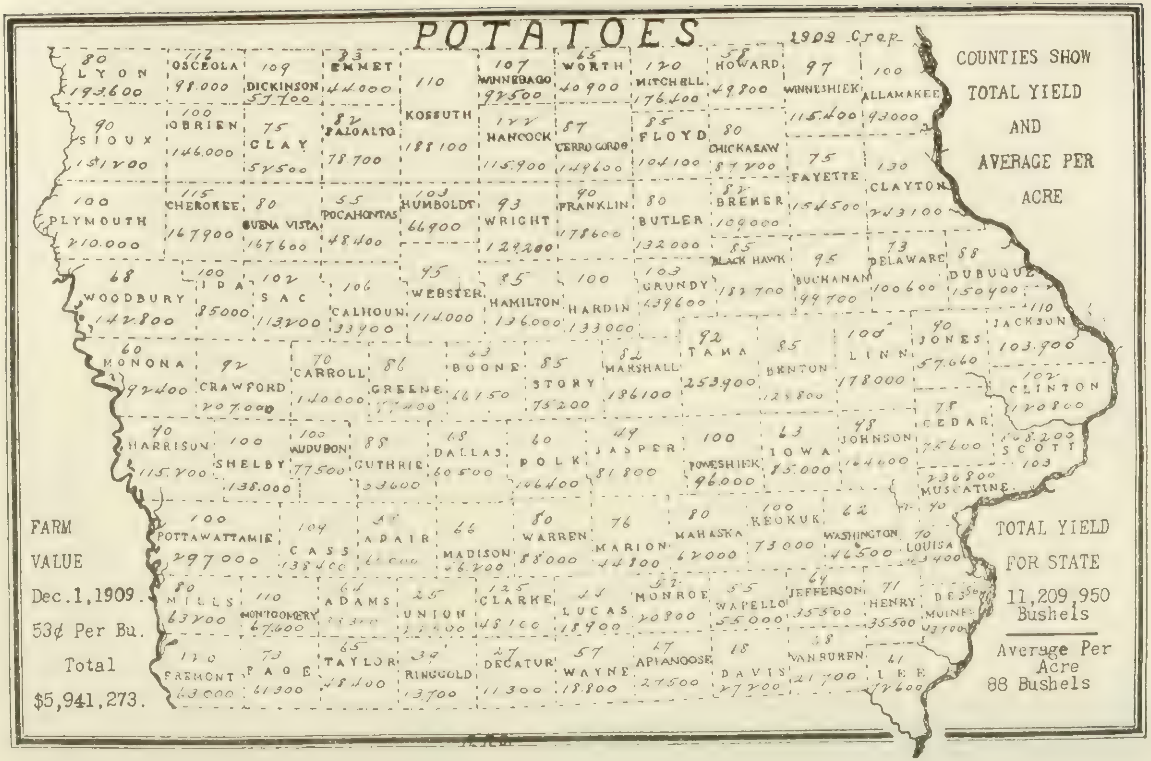
FARM VALUE Dec. 1. 1909. 46¢ Per Bu. Total $4,889,478.

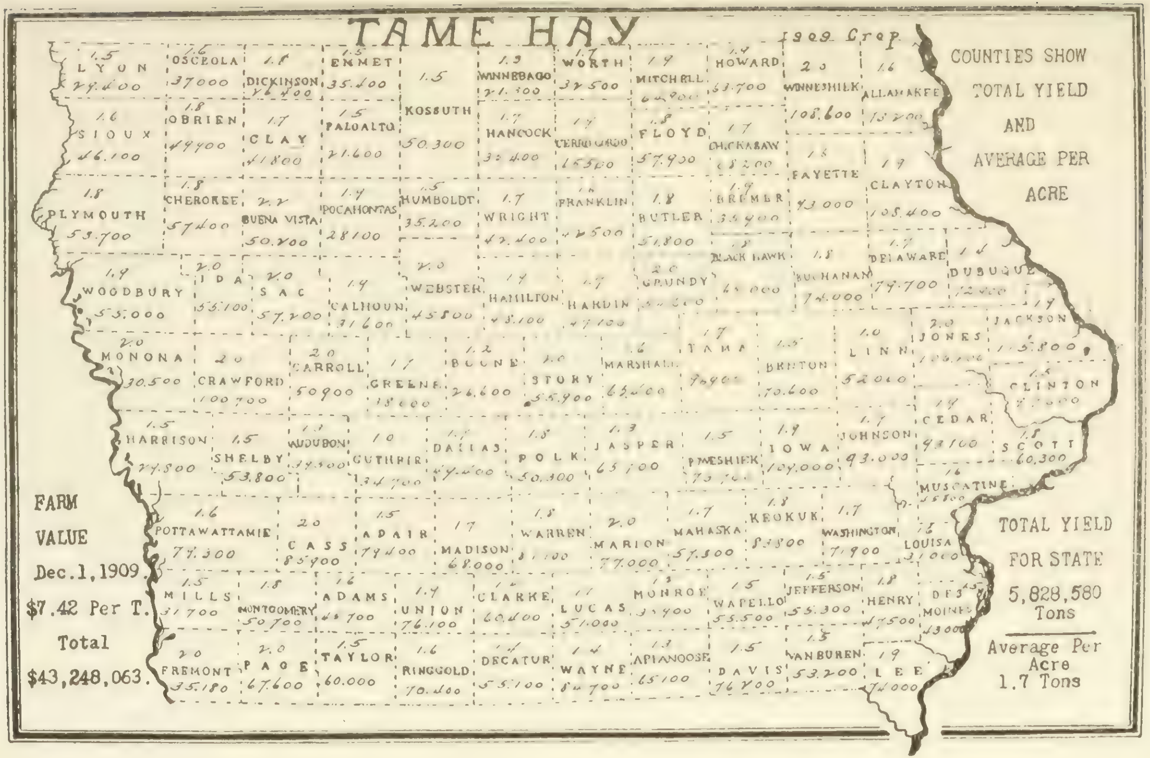
TOTAL YIELD FOR STATE 10,629,300 Bushels

Average Per Acre 21.6 Bushels


RYE
1909 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
15 LYON 2.000
14 OSCEOLA 140
12 DICKINSON 1000
15 EMMET 750
18 KOSSUTH 600
17 WINNEBAGO 250
WORTH 1
18 MITCHELL 2.700
22 HOWARD 9.600
14 WINNESHIEK 6000
16 ALLAMAKEE 7800
21 SIOUX 630
14 OBRIEN 550
12 CLAY 500
12 PALOALTO 300
15 HANCOCK 900
15 CERRO GORDO 3900
17 FLOYD 7.600
12 CHICKASAW 2400
24 FAYETTE 10800
15 CLAYTON 23.400
20 PLYMOUTH 2.600
16 CHEROKEE 240
15 BUENA VISTA 500
14 POCAHONTAS 1.400
HUMBOLDT
16 WRIGHT 640
13 FRANKLIN 1800
14 BUTLER 24100
22 BREMER 18,200
17 BLACK HAWK 40800
14 BUCHANAN 10400
16 DELAWARE 14,800
16 DUBUQUE 6,200
14 WOODBURY 2400
18 IDA 630
16 SAC 400
15 CALHOUN 1600
14 WEBSTER 1600
22 HAMILTON 2000
16 HARDIN 1800
25 GRUNDY 1000
14 JACKSON 15,000
17. MONONA 5600
11 CRAWFORD 2200
15 CARROLL 2.400
20 GREENE 1.400
17 BOONE 4100
14 STORY 3.800
18 MARSHALL 1900
10 TAMA 3000
18 BENTON 13.200
16 LINN 20000
14 JONES 4500
18 CLINTON 24.600
13. HARRISON 3.000
14 SHELBY 2.000
15 AUDUBON 900
15 GUTHRIE 2.800
14 DALLAS 7400
14 POLK 4.000
10 JASPER 7600
15 POWESHIEK 2.700
15 IOWA 5500
16 JOHNSON 26.300
15 CEDAR 10000
14 SCOTT 20.300
15 MUSCATINE 49200
18 POTTAWATTAMIE 3.600
16 CASS 3.208
12 ADAIR 3.700
16 MADISON 3000
17 WARREN 8100
17 MARION 10.600
17 MAHASKA 9.000
20 KEOKUK 18.200
14 WASHINGTON 9500
16 LOUISA 35.500
17 MILLS 1700
15 MONTGOMERY 1800
16 ADAMS 2800
15 UNION 2.700
16 CLARKE 4.100
16 LUCAS 9.750
14 MONROE 700
17 WAPELLO 16.100
14 JEFFERSON 23700
23 HENRY 23700
15 DES MOINES 14.200
20 FREMONT 4600
16 PAGE 1.400
20 TAYLOR 10.000
16 RINGGOLD 3.200
15 DECATUR 4.300
16 WAYNE 4.100
13 APPANOOSE 8.000
15 DAVIS 21.000
14 VAN BUREN 17.700
16 LEE 52600
FARM VALUE Dec. 1, 1909 60¢ Per Bu. Total $483,468.
TOTAL YIELD FOR STATE 1805,780 Bushels
Average Per Acre 16.3 Bushels


FLAX SEED
1909 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE
255,205 Bushels
Average Per Acre
10 Bushels
FARM VALUE
Dec.1,1909.
$1.29 Per Bu
Total
$329.214.
LYON 7 1,260
OSCEOLA 10 5150
DICKINSON 12 4950
EMMET 10 2900
WINNEBAGO 11 10900
WORTH 10 16900
MITCHELL 8 23200
HOWARD 10 41700
WINNESHIEK 12 38,000
ALLAMAKEE 13 2860
SIOUX 10 1150
OBRIEN 9 1500
CLAY 9 3,700
PALOALTO 12 6,000
KOSSUTH 9 1300
HANCOCK 9 1100
CERRO GORDO 9 1060
FLOYD 12 10000
CHICKASAW 11 1600
FAYETTE 10 6200
CLAYTON 11 110
PLYMOUTH 10 350
CHEROKEE 10 300
BUENA VISTA 10 2750
POCAHONTAS 10 9,100
HUMBOLDT 10 2,200
WRIGHT 9 2600
FRANKLIN 8 800
BUTLER 12 600
BREMER
BLACK HAWK
BUCHANAN
DELAWARE 13 650
DUBUQUE
WOODBURY 9 180
IDA 10
SAC 8 11,200
CALHOUN
WEBSTER 10 3900
HAMILTON 9 1500
HARDIN 11 270
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON 12 240
MONONA 9 225
CRAWFORD
CARROLL
GREENE 9 1,080
BOONE
STORY
MARSHALL
CEDAR
SCOTT 7 140
HARRISON
SHELBY 10 850
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR 9 540
WAYNE 8 320
APPANOOSE
DAVIS
VAN BUREN
LEE


POTATOES
1909 Crop
80 LYON 193.600
112 OSCEOLA 98.000
109 DICKINSON 57.700
83 EMMET 44.000
110 KOSSUTH 188 100
107 WINNEBAGO 92500
65 WORTH 40 900
120 MITCHELL 176.400
58 HOWARD 49 800
97 WINNESHIEK 115.400
100 ALLAMAKEE 93000
90 SIOUX 152 200
100 OBRIEN 146.000
75 CLAY 52500
82 PALOALTO 78.700
122 HANCOCK 115.900
87 CERRO GORDO 149600
85 FLOYD 104 100
80 CHICKASAW 87 200
75 FAYETTE 154500
130 CLAYTON 243 100
100 PLYMOUTH 210.000
115 CHEROKEE 167900
80 BUENA VISTA 167600
55 POCAHONTAS 48.400
103 HUMBOLDT 66900
93 WRIGHT 129.200
90 FRANKLIN 178600
80 BUTLER 132 000
82 BREMER 109 000
85 BLACK HAWK 182 700
95 BUCHANAN 99 700
73 DELAWARE 100 600
88 DUBUQUE 150 900
68 WOODBURY 142.800
100 IDA 85000
102 SAC 113.200
106 CALHOUN 33400
95 WEBSTER 114.000
85 HAMILTON 136.000
100 HARDIN 133 000
103 GRUNDY 239600
92 TAMA 253.900
85 BENTON 123 800
100 LINN 178000
90 JONES 57.660
110 JACKSON 103.900
60 MONONA 92400
92 CRAWFORD 207.000
70 CARROLL 140 000
86 GREENE
63 BOONE 66150
85 STORY 75200
82 MARSHALL 186100
102 CLINTON 120800
90 HARRISON 115.200
100 SHELBY 138.000
100 AUDUBON 77500
85 GUTHRIE 33600
68 DALLAS 60 500
60 POLK 146400
49 JASPER 81 800
100 POWESHIEK 96.000
63 IOWA 85.000
48 JOHNSON 164000
78 CEDAR 75600
SCOTT 168.200 103
MUSCATINE 230 800 90
100 POTTAWATTAMIE 297 000
109 CASS 138 400
ADAIR
66 MADISON 46.200
80 WARREN 88000
76 MARION 44 800
80 MAHASKA 62000
100 KEOKUK 73 000
62 WASHINGTON 46500
70 LOUISA
80 MILLS 63200
110 MONTGOMERY 67.600
64 ADAMS
25 UNION
125 CLARKE 48 100
44 LUCAS 18 900
52 MONROE 20 800
55 WAPELLO 55 000
64 JEFFERSON 35500
71 HENRY 35500
56 DES MOINES 43100
110 FREMONT 63 000
73 PAGE 61 300
65 TAYLOR 48 400
39 RINGGOLD 13.700
27 DECATUR 11 300
57 WAYNE 18.800
67 APPANOOSE 27500
18 DAVIS 27 200
VAN BUREN 21 700
61 LEE 72600
COUNTIES SHOW
TOTAL YIELD
AND
AVERAGE PER
ACRE
TOTAL YIELD
FOR STATE
11,209,950
Bushels
Average Per
Acre
88 Bushels
FARM
VALUE
Dec. 1, 1909.
53¢ Per Bu.
Total
$5,941,273.

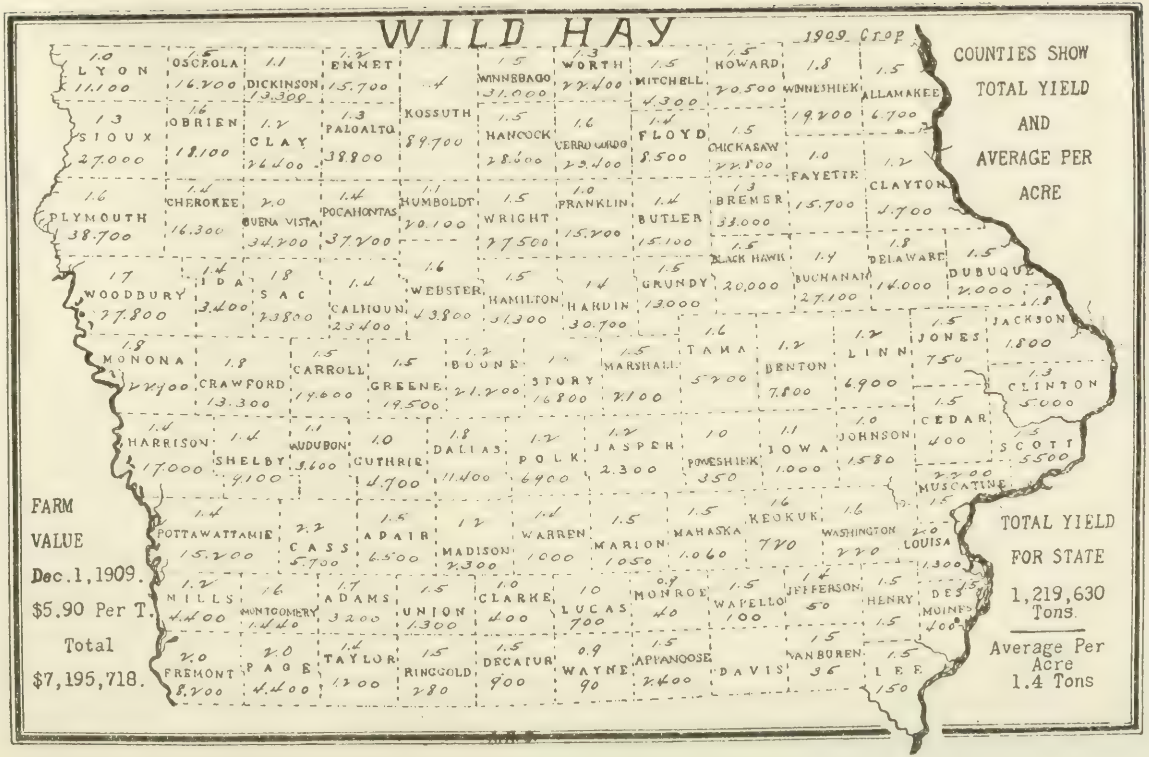

TAME HAY
1909 Crop
LYON 1.5 24.400
OSCEOLA 1.6 37000
DICKINSON 1.8 26400
EMMET 1.5 35.400
KOSSUTH 1.5 50.300
WINNEBAGO 1.9 21.300
WORTH 1.7 32500
MITCHELL 1.9 64900
HOWARD 1.4 63.700
WINNESHIEK 2.0 108.600
ALLAMAKEE 1.6 13200
SIOUX 1.6 46.100
OBRIEN 1.8 44400
CLAY 1.7 41800
PALOALTO 1.5 21.600
HANCOCK 1.7 33.400
CERRO GORDO 1.7 16500
FLOYD 1.8 57.900
CHICKASAW 1.7 8200
FAYETTE 1.8 43 000
CLAYTON 1.9 105.400
PLYMOUTH 1.8 53.700
CHEROKEE 1.8 57400
BUENA VISTA 2.2 50.200
POCAHONTAS 1.4 28100
HUMBOLDT 1.5 35.200
WRIGHT 1.7 42.400
FRANKLIN 42500
BUTLER 1.8 51.800
BREMER 1.9 35 400
BLACK HAWK 1.8 45 000
BUCHANAN 1.8 74.000
DELAWARE 1.7 77.700
DUBUQUE 1.4 12200
WOODBURY 1.9 55.000
IDA 2.0 55.100
SAC 2.0 57.200
CALHOUN 1.9 31600
WEBSTER 2.0 45800
HAMILTON 1.4 43.100
HARDIN 1.7 47100
GRUNDY 2.0
MONONA 2.0 30.500
CRAWFORD 2.0 100700
CARROLL 2.0 50900
GREENE 1.7 18600
BOONE 1.2 26.600
STORY 2.0 55.900
MARSHALL 1.6 65.400
TAMA 1.7
BENTON 1.5 70.600
LINN 1.0 52000
JONES 2.0
JACKSON 1.9 115.800
CLINTON 1.5
HARRISON 1.5 24.500
SHELBY 1.5 53.800
AUDUBON 1.3 34.500
GUTHRIE 1.0 34700
DALLAS 44.400
POLK 1.8 50.300
JASPER 1.3 65100
POWESHIEK 1.5
IOWA 1.9 104.000
JOHNSON 1.7 93.000
CEDAR 1.4 93100
SCOTT 1.8 60.300
MUSCATINE 1.6
POTTAWATTAMIE 1.6 77.300
CASS 2.0 85900
ADAIR 1.5 74400
MADISON 1.7 68.000
WARREN 1.8
MARION 2.0 77.000
MAHASKA 1.7 57.300
KEOKUK 1.8 83800
WASHINGTON 1.7 71900
LOUISA 1.6 31000
MILLS 1.5 31700
MONTGOMERY 1.8 50700
ADAMS 1.6 45700
UNION 1.4 76.100
CLARKE 1.4 60.400
LUCAS 1.1 51.000
MONROE 1.3 35400
WAPELLO 1.5 55.500
JEFFERSON 1.5 55.300
HENRY 1.8 47500
DES MOINES 1.5 43000
FREMONT 2.0 35.180
PAGE 2.0 67.600
TAYLOR 1.5 60.000
RINGGOLD 1.6 70.400
DECATUR 1.4 55.100
WAYNE 1.4 84700
APPANOOSE 1.3 65100
DAVIS 1.5 76200
VANBUREN 1.5 53.200
LEE 1.9 74000

COUNTIES SHOW
TOTAL YIELD
AND
AVERAGE PER
ACRE

TOTAL YIELD
FOR STATE
5,828,580
Tons

Average Per
Acre
1.7 Tons

FARM
VALUE
Dec.1,1909.
$7.42 Per T.
Total
$43,248,063.


WILD HAY
1909 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
LYON 1.0 11.100
OSCEOLA 1.5 16.200
DICKINSON 1.1 13.300
EMMET 1.2 15.700
KOSSUTH .4 89.700
WINNEBAGO 1.5 31.000
WORTH 1.3 22.400
MITCHELL 1.5 4.300
HOWARD 1.5 20.500
WINNESHIEK 1.8 19.200
ALLAMAKEE 1.5 6.700
SIOUX 1.3 27.000
OBRIEN 1.6 18.100
CLAY 1.2 26.400
PALOALTO 1.3 38.800
HANCOCK 1.5 28.600
CERRO GORDO 1.6 23.400
FLOYD 1.4 8.500
CHICKASAW 1.5 22.500
FAYETTE 1.0 15.700
CLAYTON 1.2 4.700
PLYMOUTH 1.6 38.700
CHEROKEE 1.4 16.300
BUENA VISTA 2.0 34.200
POCAHONTAS 1.4 37.200
HUMBOLDT 1.1 20.100
WRIGHT 1.5 27.500
FRANKLIN 1.0 15.200
BUTLER 1.4 15.100
BREMER 1.3 33.000
BLACK HAWK 1.5 20.000
BUCHANAN 1.4 27.100
DELAWARE 1.8 14.000
DUBUQUE 1.5 2.000
WOODBURY 1.7 77.800
IDA 1.4 3.400
SAC 1.8 23800
CALHOUN 1.4 23.400
WEBSTER 1.6 43.800
HAMILTON 1.5 31.300
HARDIN 1.4 30.700
GRUNDY 1.5 13.000
TAMA 1.6 5200
BENTON 1.2 7.800
LINN 1.2 6.900
JONES 1.5 750
JACKSON 1.8 1.800
CLINTON 1.3 5.000
MONONA 1.8 22900
CRAWFORD 1.8 13.300
CARROLL 1.5 17.600
GREENE 1.5 19.500
BOONE 1.2 21.200
STORY 16800
MARSHALL 1.5 2.100
HARRISON 1.4 17.000
SHELBY 1.4 9.100
AUDUBON 1.1 3.600
GUTHRIE 1.0 4.700
DALLAS 1.8 11.400
POLK 1.2 6900
JASPER 1.2 2.300
POWESHIEK 1.0 350
IOWA 1.1 1.000
JOHNSON 1.0 1.580
CEDAR 1.5 400
SCOTT 1.5 5500
MUSCATINE 2.200 1.5
POTTAWATTAMIE 1.4 15.200
CASS 2.2 5.700
ADAIR 1.5 6.500
MADISON 1.2 2.300
WARREN 1.4 1000
MARION 1.5 1050
MAHASKA 1.5 1.060
KEOKUK 1.6 770
WASHINGTON 1.6 220
LOUISA 2.0 1.300
MILLS 1.2 4.400
MONTGOMERY 1.6 1.440
ADAMS 1.7 3200
UNION 1.5 1.300
CLARKE 1.0 400
LUCAS 1.0 700
MONROE 0.9 40
WAPELLO 1.5 100
JEFFERSON 1.4 50
HENRY 1.5 1.5
DES MOINES 1.5 400
FREMONT 2.0 8.200
PAGE 2.0 4.400
TAYLOR 1.4 1.200
RINGGOLD 1.5 280
DECATUR 1.5 900
WAYNE 0.9 90
APPANOOSE 1.5 2.400
DAVIS
VANBUREN 1.5 35
LEE 1.5 150

TOTAL YIELD FOR STATE

1,219,630 Tons.

Average Per Acre 1.4 Tons

FARM VALUE

Dec. 1, 1909.

$5.90 Per T.

Total

$7,195,718.

PART II.

STATISTICAL TABLES

OF

Iowa's Principal Farm Crops.

CORN CROPS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	41	230,633,200	$.25	$57,658,300	5,625,200
1885	33	224,636,522	.23	51,666,400	6,803,834
1890	28	239,675,156	.41	98,266,814	8,559,827

CORN CROPS—1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	39	312,692,210	$.14	$ 43,916,900	8,043,390
1897	29	239,452,150	.17	40,706,860	8,253,522
1898	34.5	289,214,850	.23	66,519,400	8,396,286
1899	36.3	306,852,710	.23	70,429,410	8,460,521
1900	40.3	345,055,040	.27	93,164,860	8,618,660
1901	26.2	227,908,850	.50	113,954,000	8,687,480
1902	34	296,950,230	.28	83,432,700	8,700,000
1903	31	230,511,310	.36	82,984,071	7,398,320
1904	36	323,853,330	.35	113,348,665	9,000,000
1905	37.2	345,871,840	.35	121,055,144	9,285,150
1906	41	388,836,252	.33	128,155,143	9,443,960
1907	29.6	246,898,460	.44	108,635,322	8,858,000
1908	35.9	301,873,150	.51	153,955,306	8,399,610
1909	32.9	269,812,000	.51	137,604,120	8,213,280
Average 14 years	34.4	294,679,450	.33	96,277,220	8,554,155

OATS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	35	42,288,800	$.23	$ 9,496,424	1,179,680
1885	32.5	71,737,900	.21	15,064,959	2,207,320
1890	29	80,002,735	.38	30,401,039	2,758,715

OATS 1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	26	73,450,000	$.12	$ 8,814,000	2,825,000
1897	30	132,517,150	.16	21,211,380	4,405,782
1898	32	139,915,340	.21	29,383,220	4,299,243
1899	34.5	140,647,300	.19	26,722,980	4,069,557
1900	35	138,832,300	.20	27,766,460	3,991,690
*1901	32	114,883,000	.35	40,209,230	3,799,220
1902	31	92,907,900	.24	22,297,000	3,770,624
†1903	25.9	99,012,660	.30	29,703,798	3,822,822
1904	29.4	118,435,570	.26	30,793,284	4,018,980
1905	33.8	146,439,240	.25	36,609,810	4,177,545
1906	34	142,036,530	.27	38,349,878	4,166,800
1907	24.5	111,190,400	.39	43,364,256	4,536,170
1908	25.5	112,830,490	.43	48,517,110	4,431,650
1909	27.4	116,557,830	.35	40,795,240	4,261,414
Average 14 years	30.1	119,946,640	$.266	$31,752,690	4,041,178

*Short corn crop.

†Excessive moisture.

WHEAT—1880, 1885, 1900.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre spring wheat	Average yield per acre winter wheat	Total yield spring wheat	Total yield winter wheat	Total yield all wheat	Average farm price Dec. 1	Total farm value Dec. 1	Acreage
1880	10.5	------	-----------	-----------	36,099,760	$.82	$29,501,803	3,437,948
1885	12	------	-----------	-----------	31,776,108	.61	19,383,426	2,648,009
1890	11.7	------	-----------	-----------	25,114,552	.78	19,589,350	2,092,896

WHEAT—1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre spring wheat	Average yield per acre winter wheat	Total yield spring wheat	Total yield winter wheat	Total yield all wheat	Av. farm price Dec. 1st	Total farm value Dec. 1st	Acreage
1896	13	17	7,047,235	3,351,550	10,398,785	$.57	$ 6,020,000	739,245
1897	13.4	13	12,941,600	1,671,454	14,613,054	.74	10,813,650	1,222,974
1898	14.8	16.5	19,152,352	3,168,916	22,321,268	.53	11,602,000	1,484,682
1899	12.7	11	19,574,792	326,040	19,900,830	.58	10,701,490	1,559,931
1900	14.3	13.3	20,280,280	1,018,070	21,288,350	.60	12,799,370	1,492,630
1901	15.3	17.6	17,429,230	865,770	18,295,000	.60	10,965,000	1,188,239
1902	13	18	12,680,800	825,045	13,532,845	.53	7,062,640	1,021,281
1903	12.6	16.9	9,481,350	1,435,380	10,916,730	.67	7,167,643	837,422
1904	9.1	14.3	7,080,430	1,017,000	8,097,430	.89	7,044,809	846,070
1905	14.4	20.2	5,155,760	1,253,020	6,408,780	.72	4,614,321	420,068
1906	15	23	5,603,880	1,566,050	7,169,930	.64	4,579,697	443,810
1907	13	19.8	4,402,320	1,698,101	6,100,421	.82	4,974,302	424,407
1908	15.4	19.7	4,968,250	1,678,540	6,646,790	.86	5,716,239	408,614
1909	13.6	20.5	3,608,910	2,739,050	6,347,960	.90	5,767,945	399,087
Av. 14 years	13.5	17.2	10,671,299	1,608,142	12,288,440	.68	$ 7,844,936	892,033

BARLEY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	23	4,600,000	$.42	$1,932,000	200,000
1885	27	5,737,095	.33	1,893,241	212,485
1890	24	3,664,368	.47	1,722,254	152,682

BARLEY—1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	29	15,881,618	$.20	$3,176,320	547,642
1897	25	14,076,850	.23	3,237,670	551,867
1898	27.5	14,138,000	.30	4,209,740	509,589
1899	25.6	14,719,310	.30	4,415,570	557,598
1900	25.3	12,695,200	.33	4,189,410	501,740
1901	24.2	14,654,410	.44	6,447,940	604,610
1902	25	15,380,910	.33	5,075,710	594,070
1903	24.7	12,179,790	.37	4,506,522	493,108
1904	25	12,317,710	.34	4,188,021	493,370
1905	27.5	15,566,770	.33	5,137,034	565,700
1906	26.5	14,858,830	.36	5,349,178	558,870
1907	24.6	9,893,330	.60	5,935,998	397,210
1908	26.7	10,629,660	.50	5,314,830	307,408
1909	21.6	10,629,300	.46	4,889,478	492,327
Average 14 years	25.2	13,401,550	$.36	$4,719,530	518,936

RYE—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	14	574,000	$.38	$218,120	41,000
1885	15	1,710,000	.42	718,200	114,000
1890	16	1,608,960	.51	820,570	100,560

RYE—1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	15	1,891,716	$.25	$ 486,680	121,670
1897	15	3,490,344	.34	1,186,710	226,198
1898	16	3,370,550	.38	1,280,800	210,309
1899	16.3	2,061,160	.40	824,460	126,236
1900	15.6	1,621,130	.43	697,300	103,680
1901	15.8	859,630	.48	859,630	54,390
1902	17	882,830	.40	353,132	55,150
1903	15.6	1,923,060	.44	846,146	123,273
1904	15	1,517,090	.54	819,228	99,590
1905	18	1,283,500	.52	667,420	71,305
1906	17.5	1,093,160	.48	520,719	62,530
1907	17	900,060	.61	549,036	52,975
1908	17.1	869,072	.63	547,515	50,893
1909	16.3	805,780	.60	483,464	49,591
Average 14 years	16.3	1,612,073	$.464	$ 723,017	100,556

HAY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield tame hay	Total yield tons	Average yield wild hay	Total yield tons	Total yield all hay tons	Average value per ton tame hay	Average value per ton wild hay	Total value all hay	Acreage
*1880	----	----------	------	----------	----------	------	------	----------	----------
*1885	----	----------	------	----------	----------	------	------	----------	----------
1890	1.5	4,991,335	------	----------	----------	$6.84	------	$34,140,731	3,327,557

*No authentic data obtainable.

HAY—1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Tame Hay		Wild Hay		Total yield all hay tons	Av. value per ton tame hay	Av. value per ton wild hay	Total value all hay	Acreage
	Average yield	Total yield tons	Average yield	Total yield tons					
1896	1.5	3,376,446	1.5	2,325,000	5,701,440	$4.50	$3.30	$22,782,000	3,800,960
1897	1.6	3,362,287	1.3	1,939,117	5,301,320	4.50	3.70	22,304,000	3,315,972
1898	1.7	3,852,561	1.2	1,645,419	5,498,080	4.30	3.50	22,281,000	4,104,967
1899	1.5	3,852,941	1.2	1,458,195	5,311,130	5.75	4.90	29,350,000	3,742,655
1900	1.4	3,609,010	1	1,530,050	5,139,060	6.50	5.00	31,120,000	4,078,960
1901	1.4	3,711,680	1.2	1,268,700	4,980,380	8.25	6.30	38,712,000	3,608,450
1902	1.8	4,439,040	1.3	1,202,860	5,641,900	6.80	5.50	36,787,322	3,391,408
1903	1.9	5,216,404	1.3	1,191,345	6,407,749	5.75	4.95	35,891,480	3,651,894
1904	1.5	4,499,090	1.2	1,091,590	5,590,680	5.62	4.50	30,197,040	3,707,298
1905	1.8	6,477,300	1.2	1,313,310	7,790,610	5.50	4.50	41,535,045	4,692,925
1906	1.3	4,892,950	1.2	1,110,690	6,003,640	7.50	5.50	42,805,920	4,418,600
1907	1.5	5,117,878	1.3	1,172,590	6,290,468	8.50	6.75	51,316,945	4,268.730
1908	1.8	5,838,640	1.6	1,445,980	7,284,620	6.16	5.09	43,326,060	4,146.870
1909	1.7	5,828,580	1.4	1,219,630	7,048,210	7.42	5.90	50,443,781	4,299,740
Av. 14 years	1.6	4,576,771	1.3	1,422,462	5,999,235	6.22	4.89	35,632,328	3,944,960

FLAX—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Av. yield per acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acreage
1880	10	1,034,200	$1.00	$1,034,200	103,420
*1885			.94	2,503,293	
1890	10.5	2,929,081	1.10	3,276,989	283,722

*No other data.

FLAX—1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Av. yield per acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acreage
1896	9.5	1,946,720	$ .95	$1,135,000	199,128
1897	10	2,498,600	.87	2,173,782	249,882
1898	10.5	2,376,600	.80	1,901,280	225,014
1899	11.2	1,597,790	1.04	1,661,898	142,175
1900	11.7	1,222,980	1.50	1,834,470	108,850
1901	18.8	916,890	1.29	916,890	104,140
1902	8	755,350	1.00	725,350	94,767
1903	8.7	355,160	.78	277,024	40,823
1904	11	591,140	1.15	679,811	51,370
1905	9.8	173,770	.90	156,393	17,732
1906	10.7	205,280	.97	200,091	19,160
1907	10.8	461,960	.98	408,640	42,790
1908	11.3	461,580	1.01	466,195	40,833
1909	10	255,205	1.29	329,214	25,525
Average 14 years	10.8	987,073	$1.04	$ 919,000	97,300

POTATOES—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Av. yield per acre	Total yield	$Av. farm value per bushel Dec. 1st	Total value	Acreage
1880	95	10,165,000	$.35	$3,557,750	107,000
1885	82	12,874,000	.40	5,149,600	157,000
1890	49	8,332,352	.81	6,749,205	170,048

POTATOES—1896-1909.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Av. Yield per acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acreage
1896	87	14,814,795	$.21	$2,962,950	170,285
1897	60	10,051,910	.45	4,523,360	163,248
1898	76	12,538,410	.31	3,826,900	164,456
1899	98	15,252,934	.24	3,660,714	154,243
1900	72	10,850,900	.40	4,340,360	149,680
*1901	37.4	5,098,460	.90	4,588,610	136,300
1902	91	12,051,670	.34	4,095,650	138,484
†1903	53.8	6,082,694	.75	4,562,020	113,433
1904	125	14,255,680	.28	3,991,590	113,250
1905	84	9,352,190	.50	4,676,045	111,335
1906	101	11,697,500	.48	5,614,800	115,310
1907	84	9,847,430	.62	6,105,406	117,350
1908	89.9	10,658,290	.59	6,288,391	118,517
1909	88	11,209,950	.53	5,941,273	127,841
Average 14 years	82.4	10,983,058	$.47	$4,655,576	135,267

*Very dry.

†Very wet.

Live Stock Pavilion Iowa State Fair and Exposition Grounds

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Figures taken from the December, 1909, Supplement of the Crop

Acreage, production and value of corn in the United States in 1909, by states.

State or Territory	Corn				
	Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
Maine	17,000	38.0	646,000	$.80	$ 517,000
New Hampshire	30,000	35.1	1,053,000	.76	800,000
Vermont	65,000	37.0	2,405,000	.73	1,756,000
Massachusetts	47,000	38.0	1,786,000	.81	1,447,000
Rhode Island	11,000	33.2	365,000	.97	354,000
Connecticut	60,000	41.0	2,460,000	.75	1,845,000
New York	670,000	36.0	24,120,000	.74	17,849,000
New Jersey	290,000	32.7	9,483,000	.71	6,733,000
Pennsylvania	1,525,000	32.0	48,800,000	.70	34,160,000
Delaware	200,000	31.0	6,200,000	.58	3,596,000
Maryland	700,000	31.4	21,980,000	.65	14,287,000
Virginia	2,040,000	23.2	47,328,000	.74	35,023,000
West Virginia	880,000	31.4	27,632,000	.74	20,448,000
North Carolina	2,898,000	16.8	48,686,000	.85	41,383,000
South Carolina	2,218,000	16.7	37,041,000	.90	33,337,000
Georgia	4,400,000	13.9	61,160,000	.86	52,598,000
Florida	665,000	12.6	8,379,000	.83	6,955,000
Ohio	3,875,000	39.5	153,062,000	.56	85,715,000
Indiana	4,913,000	40.0	196,520,000	.50	98,260,000
Illinois	10,300,000	35.9	369,770,000	.52	192,280,000
Michigan	1,976,000	35.4	69,950,000	.61	42,670,000
Wisconsin	1,533,000	33.0	50,589,000	.60	30,353,000
Minnesota	1,690,000	34.8	58,812,000	.49	28,818,000
*Iowa	9,200,000	31.5	289,800,000	.49	142,002,000
Missouri	8,100,000	26.4	213,840,000	.59	126,166,000
North Dakota	195,000	31.0	6,045,000	.55	3,325,000
South Dakota	2,059,000	31.7	65,270,000	.50	32,635,000
Nebraska	7,825,000	24.8	194,060,000	.50	97,030,000
Kansas	7,750,000	19.9	154,225,000	.54	83,282,000
Kentucky	3,568,000	29.0	103,472,000	.62	64,153,000
Tennessee	3,575,000	22.0	78,650,000	.70	55,055,000
Alabama	3,233,000	13.5	43,646,000	.85	37,099,000
Mississippi	2,810,000	14.5	40,745,000	.81	33,003,000
Louisiana	2,226,000	23.0	51,198,000	.69	35,327,000
Texas	8,150,000	15.0	122,250,000	.76	92,910,000
Oklahoma	5,950,000	17.0	101,150,000	.55	55,632,000
Arkansas	2,800,000	18.0	50,400,000	.72	36,288,000
Montana	5,000	35.0	175,000	.86	150,000
Wyoming	5,000	28.0	140,000	.78	109,000
Colorado	135,000	24.2	3,267,000	.70	2,287,000
New Mexico	68,000	31.3	2,128,000	.90	1,915,000
Arizona	13,000	32.1	417,000	1.00	417,000
Utah	13,000	31.4	408,000	.87	355,000
Nevada	------	-----	--------	----	--------------
Idaho	6,000	30.6	184,000	.75	138,000
Washington	15,000	27.8	417,000	.86	359,000
Oregon	17,000	30.7	522,000	.80	418,000
California	50,000	34.8	1,740,000	.91	1,583,000
United States	108,771,000	25.5	2,772,376,000	59.6	$1,652,822,000

*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page 87 of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1909.

Reporter issued by the United States Department of Agriculture.

Acreage, production and value of wheat in the United States in 1909, by states.

Winter Wheat					Spring Wheat				
Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
------	------	------	------	------	9,000	25.5	230,000	$1.10	$ 253,000
------	------	------	------	------	------	------	------	------	------
------	------	------	------	------	1,000	25.0	25,000	1.20	30,000
------	------	------	------	------	------	------	------	------	------
------	------	------	------	------	------	------	------	------	------
------	------	------	------	------	------	------	------	------	------
420,000	21.0	8,820,000	$1.11	9,790,000	------	------	------	------	------
110,000	17.9	1,969,000	1.09	2,146,000	------	------	------	------	------
1,545,000	17.0	26,265,000	1.09	28,629,000	------	------	------	------	------
118,000	14.0	1,652,000	1.04	1,718,000	------	------	------	------	------
770,000	14.5	11,165,000	1.10	12,282,000	------	------	------	------	------
790,000	11.2	8,848,000	1.15	10,175,000	------	------	------	------	------
370,000	13.0	4,810,000	1.13	[illegible]	------	------	------	------	------
570,000	9.5	5,415,000	1.27	[illegible]	------	------	------	------	------
381,000	10.0	3,810,000	1.46	5,563,000	------	------	------	------	------
245,000	10.0	2,450,000	1.45	3,552,000	------	------	------	------	------
------	------	------	------	------	------	------	------	------	------
1,480,000	15.9	23,532,000	1.12	[illegible]	------	------	------	------	------
2,165,000	15.3	33,124,000	1.10	36,436,000	------	------	------	------	------
1,810,000	17.4	31,494,000	1.04	[illegible]	------	------	------	------	------
775,000	18.8	14,570,000	1.12	16,318,000	------	------	------	------	------
59,000	20.4	1,204,000	.96	1,156,000	120,000	19.0	2,280,000	.96	2,189,000
------	------	------	------	------	5,600,000	16.8	94,080,000	.96	90,317,000
144,000	21.6	3,110,000	.93	2,892,000	295,000	14.7	4,336,000	.93	4,032,000
1,943,000	14.7	28,562,000	1.05	29,990,000	------	------	------	------	------
------	------	------	------	------	6,625,000	13.7	90,762,000	.92	83,501,000
------	------	------	------	------	3,375,000	14.1	47,588,000	.90	42,829,000
2,350,000	19.4	45,590,000	.89	40,575,000	290,000	14.0	4,060,000	.89	3,613,000
5,895,000	14.5	85,478,000	.96	82,059,000	150,000	11.5	1,725,000	.96	1,656,000
670,000	11.8	7,906,000	1.11	8,776,000	------	------	------	------	------
800,000	10.4	8,320,000	1.15	9,568,000	------	------	------	------	------
98,000	10.5	1,029,000	1.30	1,338,000	------	------	------	------	------
1,000	11.0	11,000	1.21	13,000	------	------	------	------	------
------	------	------	------	------	------	------	------	------	------
555,000	9.1	5,050,000	1.18	5,959,000	------	------	------	------	------
1,225,000	12.8	[illegible]	[illegible]	15,837,000	------	------	------	------	------
151,000	11.4	1,721,000	1.10	1,893,000	------	------	------	------	------
185,000	32.5	6,012,000	.87	5,230,000	165,000	28.8	4,752,000	.87	4,134,000
25,000	32.5	812,000	.99	804,000	55,000	27.0	1,485,000	.99	1,470,000
90,000	29.7	2,673,000	.93	2,486,000	275,000	29.4	8,085,000	.93	7,519,000
------	------	------	------	------	41,000	24.5	1,004,000	1.17	1,175,000
------	------	------	------	------	16,000	25.0	400,000	1.39	556,000
135,000	24.0	3,240,000	.90	2,916,000	100,000	28.5	2,850,000	.90	2,565,000
------	------	------	------	------	36,000	28.7	1,033,000	1.04	1,074,000
315,000	29.0	9,135,000	.87	7,947,000	205,000	26.0	5,330,000	.87	4,637,000
780,000	25.8	20,124,000	.93	18,715,000	760,000	20.6	15,656,000	.93	14,560,000
535,000	21.0	11,235,000	.93	10,449,000	275,000	18.7	5,142,000	.93	4,782,000
825,000	14.0	11,550,000	1.11	12,820,000	------	------	------	------	------
28,330,000	15.8	446,366,000	$1.029	$459,154,000	18,393,000	15.8	290,823,000	$93.1	$270,892,000

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

State or Territory	Oats				
	Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
Maine	124,000	37.0	4,588,000	$.58	$ 2,661,000
New Hampshire	14,000	31.5	441,000	.64	282,000
Vermont	81,000	32.2	2,608,000	.50	1,304,000
Massachusetts	7,000	31.0	217,000	.58	126,000
Rhode Island	2,000	25.0	50,000	.53	26,000
Connecticut	11,000	27.5	302,000	.53	160,000
New York	1,325,000	28.2	37,365,000	.49	18,309,000
New Jersey	60,000	25.5	1,530,000	.50	765,000
Pennsylvania	998,000	26.0	25,948,000	.50	12,974,000
Delaware	4,000	25.5	102,000	.48	49,000
Maryland	28,000	25.4	711,000	.49	348,000
Virginia	200,000	19.0	3,800,000	.54	2,052,000
West Virginia	98,000	22.0	2,156,000	.54	1,164,000
North Carolina	196,000	16.5	3,234,000	.66	2,134,000
South Carolina	211,000	21.0	4,431,000	.72	3,190,000
Georgia	350,000	19.0	6,650,000	.71	4,722,000
Florida	31,000	17.0	527,000	.75	395,000
Ohio	1,730,000	32.5	56,225,000	.41	23,052,000
Indiana	1,820,000	30.5	55,510,000	.39	21,649,000
Illinois	4,346,000	36.6	159,064,000	.38	60,444,000
Michigan	1,420,000	30.5	43,310,000	.41	17,757,000
Wisconsin	2,280,000	35.0	79,800,000	.39	31,122,000
Minnesota	2,736,000	33.0	90,288,000	.35	31,601,000
*Iowa	4,300,000	27.0	116,100,000	.35	40,635,000
Missouri	690,000	27.0	18,630,000	.43	8,011,000
North Dakota	1,550,000	32.0	49,600,000	.33	16,368,000
South Dakota	1,450,000	30.0	43,500,000	.34	14,790,000
Nebraska	2,473,000	25.0	61,825,000	.35	21,639,000
Kansas	964,000	28.2	27,185,000	.43	11,690,000
Kentucky	173,000	22.3	3,858,000	.51	1,968,000
Tennessee	200,000	20.0	4,000,000	.53	2,120,000
Alabama	270,000	16.5	4,455,000	.70	3,118,000
Mississippi	150,000	16.0	2,400,000	.68	1,632,000
Louisiana	32,000	20.0	640,000	.62	397,000
Texas	615,000	18.7	11,500,000	.62	7,130,000
Oklahoma	550,000	29.0	15,950,000	.46	7,337,000
Arkansas	164,000	22.8	3,739,000	.59	2,206,000
Montana	300,000	51.3	15,390,000	.42	6,464,000
Wyoming	100,000	35.0	3,500,000	.50	1,750,000
Colorado	196,000	38.0	7,448,000	.53	3,947,000
New Mexico	24,000	40.0	960,000	.66	634,000
Arizona	4,000	37.0	148,000	.79	117,000
Utah	55,000	46.1	2,536,000	.52	1,319,000
Nevada	7,000	40.0	280,000	.59	165,000
Idaho	175,000	44.5	7,788,000	.50	3,894,000
Washington	202,000	49.0	9,898,000	.48	4,751,000
Oregon	288,000	37.8	10,886,000	.52	5,661,000
California	200,000	31.4	6,280,000	.66	4,145,000
United States	33,204,000	30.3	1,007,353,000	$.405	$408,174,000

*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page 87 of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1909.—Con.

Barley					Rye				
Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
8,000	28.5	228,000	$ .77	$ 176,000	-	-	-	-	-
2,000	25.0	50,000	.80	40,000	-	-	-	-	-
15,000	30.0	450,000	.77	346,000	2,000	15.5	31,000	$1.00	$ 31,000
-	-	-	-	-	4,000	16.2	65,000	1.05	68,000
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	10,000	18.7	187,000	.90	168,000
77,000	24.8	1,910,000	.69	1,318,000	160,000	17.0	2,720,000	.80	2,176,000
-	-	-	-	-	79,000	16.3	1,288.000	.79	1,018,000
9,000	21.8	196,000	.67	131,000	300,000	15.3	5,508,000	.80	4,406,000
-	-	-	-	-	1,000	14.0	14,000	.75	10,000
1,000	32.0	32,000	.64	20,000	20,000	14.1	282,000	.78	220,000
3,000	28.5	86,000	.71	61,000	15,000	12.3	184,000	.84	155,000
-	-	-	-	-	11,000	13.5	148,000	.90	133,000
-	-	-	-	-	13,000	9.4	122,000	1.03	126,000
-	-	-	-	-	4,000	9.8	39,000	1.41	55,000
-	-	-	-	-	14,000	9.0	126,000	1.50	189,000
-	-	-	-	-	-	-	-	-	-
32,000	25.9	829,000	.61	506,000	57,000	17.2	980,000	.76	745,000
9,000	23.5	212,000	.63	134,000	57,000	16.5	940,000	.74	696,000
31,000	28.0	868,000	.52	451,000	71,000	17.8	1,264,000	.74	935,000
67,000	24.7	1,655,000	.61	1,010,000	350,000	15.5	5,425,000	.69	3,743,000
866,000	28.0	24,248,000	.56	13,579,000	290,000	16.3	4,727,000	.68	3,214,000
1,339,000	23.6	31,600,000	.47	14,852,000	120,000	19.0	2,280,000	.60	1,368,000
495,000	22.0	10,890,000	.46	5,009,000	53,000	17.8	943,000	.63	594,000
2,000	25.0	50,000	.68	34,000	15,000	15.0	225,000	.82	184,000
987,000	21.0	20,727,000	.43	8,913,000	26,000	18.4	478,000	.57	272,000
1,021,000	19.5	19,910,000	.45	8,960,000	33,000	17.5	578,000	.59	341,000
120,000	22.0	2,640,000	.43	1,135,000	80,000	16.5	1,320,000	.61	805,000
270,000	18.0	4,860,000	.53	2,576,000	40,000	14.2	568,000	.75	426,000
1,000	24.0	24,000	.76	18,000	13,000	12.7	165,000	.88	145,000
1,000	24.0	24,000	.79	19,000	8,000	10.7	86,000	.96	83,000
-	-	-	-	-	2,000	11.3	23,000	1.36	31,000
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
4,000	19.4	78,000	1.00	78,000	4,000	11.2	45,000	1.23	55,000
30,000	23.0	690,000	.65	448,000	4,000	13.5	54,000	.93	50,000
-	-	-	-	-	2,000	10.5	21,000	1.05	22,000
50,000	38.0	1,900,000	.63	1,197,000	2,000	29.0	58,000	.75	44,000
4,000	31.0	124,000	.74	92,000	1,000	26.0	26,000	.90	23,000
26,000	36.0	936,000	.66	618,000	4,000	22.0	88,000	.73	64,000
1,000	40.0	40,000	1.00	40,000	-	-	-	-	-
32,000	40.0	1,280,000	.88	1,126,000	-	-	-	-	-
13,000	40.0	520,000	.66	343,000	3,000	22.0	66,000	.70	46,000
8,000	38.0	304,000	.75	228,000	-	-	-	-	-
62,000	40.0	2,480,000	.59	1,463,000	4,000	21.5	86,000	.70	60,000
182,000	39.5	7,189,000	.64	4,601,000	4,000	21.0	84,000	.94	79,000
63,000	31.5	1,984,000	.66	1,309,000	9,000	17.0	153,000	1.00	153,000
1,180,000	26.5	31,270,000	.74	23,140,000	61,000	13.8	842,000	1.04	876,000
7,011,000	24.3	170,284,000	$ .552	$ 93,971,000	2,006,000	16.1	32,239,000	$ .739	$ 23,809,000

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

State or Territory	Potatoes [Irish] Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
Maine	130,000	225	29,250,000	$.47	$ 13,748,000
New Hampshire	21,000	130	2,730,000	.64	1,747,000
Vermont	30,000	155	4,650,000	.44	2,046,000
Massachusetts	34,000	125	4,250,000	.79	3,358,000
Rhode Island	6,000	125	750,000	.80	600,000
Connecticut	36,000	120	4,320,000	.83	3,586,000
New York	438,000	120	52,560,000	.50	26,280,000
New Jersey	80,000	90	7,200,000	.82	5,904,000
Pennsylvania	305,000	78	23,790,000	.65	15,464,000
Delaware	9,000	96	864,000	.72	622,000
Maryland	35,000	80	2,800,000	.66	1,848,000
Virginia	60,000	92	5,520,000	.70	3,864,000
West Virginia	39,000	98	3,822,000	.68	2,599,000
North Carolina	25,000	74	1,850,000	.81	1,498,000
South Carolina	9,000	85	765,000	1.15	880,000
Georgia	10,000	81	810,000	1.00	810,000
Florida	5,000	95	475,000	1.20	570,000
Ohio	182,000	93	16,926,000	.56	9,479,000
Indiana	95,000	95	9,025,000	.52	4,693,000
Illinois	164,000	91	14,924,000	.61	9,104,000
Michigan	348,000	105	36,540,000	.35	12,789,000
Wisconsin	262,000	102	26,724,000	.38	10,155,000
Minnesota	160,000	115	18,400,000	.35	6,440,000
*Iowa	145,000	89	12,905,000	.55	7,098,000
Missouri	88,000	85	7,480,000	.67	5,012,000
North Dakota	40,000	110	4,400,000	.45	1,980,000
South Dakota	50,000	80	4,000,000	.63	2,520,000
Nebraska	105,000	78	8,190,000	.60	4,914,000
Kansas	91,000	79	7,189,000	.79	5,679,000
Kentucky	40,000	92	3,680,000	.64	2,355,000
Tennessee	30,000	75	2,250,000	.71	1,598,000
Alabama	17,000	80	1,360,000	.98	1,333,000
Mississippi	9,000	87	783,000	.95	744,000
Louisiana	16,000	75	1,200,000	.91	1,092,000
Texas	60,000	50	3,000,000	1.06	3,180,000
Oklahoma	27,000	70	1,890,000	.95	1,796,000
Arkansas	33,000	70	2,310,000	.92	2,125,000
Montana	25,000	180	4,500,000	.51	2,295,000
Wyoming	10,000	160	1,600,000	.63	1,008,000
Colorado	65,000	160	10,400,000	.57	5,928,000
New Mexico	1,000	85	85,000	1.01	86,000
Arizona	------	------	------	------	------
Utah	15,000	180	2,700,000	.43	1,161,000
Nevada	3,000	180	540,000	.85	459,000
Idaho	25,000	200	5,000,000	.48	2,400,000
Washington	41,000	170	6,970,000	.47	3,276,000
Oregon	46,000	160	7,360,000	.60	4,416,000
California	60,000	130	7,800,000	.77	6,006,000
United States	3,525,000	106.8	376,537,000	$.549	$ 206,545,000

*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page 87 of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1909.—Con.

Buckwheat					Flaxseed				
Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
23,000	28.0	644,000	$ .70	$ 451,000	----------	-----	----------	------	----------
2,000	22.0	44,000	.76	33,000	----------	-----	----------	------	----------
8,000	22.0	176,000	.76	134,000	----------	-----	----------	------	----------
3,000	19.3	58,000	.75	44,000	----------	-----	----------	------	----------
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3,000	19.5	58,000	1.00	58,000	----------	-----	----------	------	----------
313,000	24.0	7,512,000	.69	5,183,000	----------	-----	----------	------	----------
13,000	21.8	283,000	.74	209,000	----------	-----	----------	------	----------
290,000	19.5	5,655,000	.68	3,845,000	----------	-----	----------	------	----------
2,000	19.8	40,000	.60	24,000	----------	-----	----------	------	----------
9,000	16.6	149,000	.74	110,000	----------	-----	----------	------	----------
21,000	18.0	378,000	.76	287,000	----------	-----	----------	------	----------
22,000	22.7	499,000	.76	379,000	----------	-----	----------	------	----------
5,000	19.8	99,000	.80	79,000	----------	-----	----------	------	----------
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15,000	21.2	318,000	.78	248,000	----------	-----	----------	------	----------
6,000	17.3	104,000	.77	82,000	----------	-----	----------	------	----------
4,000	18.2	73,000	.80	58,000	----------	-----	----------	------	----------
58,000	14.3	829,000	.66	547,000	----------	-----	----------	------	----------
18,000	12.3	221,000	.78	172,000	20,000	14.5	290,000	$1.35	$ 392,000
5,000	15.2	76,000	.71	54,000	450,000	10.0	4,500,000	1.50	6,750,000
9,000	15.0	135,000	.85	115,000	30,000	9.8	294,000	1.30	382,000
2,000	21.0	42,000	.90	37,000	25,000	8.1	202,000	1.15	232,000
----------	-----	----------	------	----------	1,530,000	9.3	14,229,000	1.57	22,340,000
----------	-----	----------	------	----------	600,000	9.4	5,640,000	1.51	8,516,000
1,000	16.0	16,000	.90	14,000	16,000	8.5	136,000	1.22	166,000
1,000	14.0	14,000	1.00	14,000	55,000	7.0	385,000	1.10	424,000
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1,000	15.0	15,000	.79	11,000	----------	-----	----------	------	----------
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834,000	20.9	17,438,000	$.699	$ 12,188,000	2,742,000	9.4	25,856,000	$1.526	$ 39,466,000

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

State or Territory	Hay				
	Acreage	Yield per acre	Production	Price per ton Dec. 1	Total farm value Dec. 1
Maine	1,400,000	0.95	1,330,000	$14.70	$ 19,551,000
New Hampshire	640,000	.97	621,000	17.90	11,116,000
Vermont	879,000	1.25	1,099,000	14.70	16,155,000
Massachusetts	585,000	1.15	673,000	18.90	12,720,000
Rhode Island	62,000	1.10	68,000	18.60	1,265,000
Connecticut	490,000	1.15	564,000	19.30	10,885,000
New York	4,764,000	1.05	5,002,000	14.20	71,028,000
New Jersey	437,000	1.25	546,000	16.50	9,009,000
Pennsylvania	3,118,000	1.20	3,742,000	14.60	54,633,000
Delaware	78,000	1.40	109,000	15.00	1,635,000
Maryland	297,000	1.20	356,000	14.40	5,126,000
Virginia	466,000	1.30	606,000	13.30	8,060,000
West Virginia	675,000	1.25	844,000	13.30	11,225,000
North Carolina	175,000	1.38	242,000	14.40	3,485,000
South Carolina	66,000	1.23	81,000	15.50	1,256,000
Georgia	87,000	1.35	117,000	15.80	1,849,000
Florida	19,000	1.38	26,000	15.00	390,000
Ohio	2,820,000	1.43	4,033,000	10.90	43,960,000
Indiana	2,200,000	1.40	3,080,000	10.50	32,340,000
Illinois	2,852,000	1.45	4,135,000	9.90	40,936,000
Michigan	2,618,000	1.30	3,403,000	11.40	38,794,000
Wisconsin	2,369,000	1.53	3,625,000	9.60	34,800,000
Minnesota	927,000	1.75	1,622,000	6.00	9,732,000
*Iowa	3,648,000	1.64	5,983,000	7.10	42,479,000
Missouri	2,755,000	1.35	3,719,000	8.30	30,868,000
North Dakota	194,000	1.37	266,000	5.00	1,330,000
South Dakota	536,000	1.50	804,000	5.10	4,100,000
Nebraska	1,550,000	1.50	2,325,000	6.00	13,950,000
Kansas	1,829,000	1.45	2,652,000	6.00	15,912,000
Kentucky	480,000	1.36	653,000	11.90	7,771,000
Tennessee	450,000	1.50	675,000	12.80	8,640,000
Alabama	111,000	1.50	166,000	13.50	2,241,000
Mississippi	83,000	1.47	122,000	11.50	1,403,000
Louisiana	23,000	1.50	34,000	10.70	364,000
Texas	618,000	.95	587,000	11.90	6,985,000
Oklahoma	900,000	.90	810,000	7.30	5,913,000
Arkansas	198,000	1.25	248,000	10.80	2,678,000
Montana	556,000	1.79	995,000	10.00	9,950,000
Wyoming	277,000	2.40	665,000	8.90	5,918,000
Colorado	704,000	2.50	1,760,000	10.00	17,600,000
New Mexico	185,000	2.60	481,000	11.10	5,339,000
Arizona	109,000	3.30	360,000	12.80	4,608,000
Utah	375,000	2.90	1,088,000	9.00	9,792,000
Nevada	210,000	2.35	494,000	10.50	5,187,000
Idaho	477,000	2.85	1,359,000	9.10	12,367,000
Washington	380,000	2.10	798,000	14.00	11,172,000
Oregon	422,000	2.05	865,000	11.70	10,120,000
California	650,000	1.70	1,105,000	11.50	12,708,000
United States	45,744,000	1.42	64,938,000	$10.62	$ 689,345,000

*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page 87 of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1909.—Con.

Tobacco					Rice (rough)				
Acreage	Yield per acre	Production	Price per lb. Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bushel Dec 1	Total farm value Dec. 1
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100	1,700	170,000	$.15	$ 25,500	-----	-----	-----	-----	-----
200	1,675	335,000	.15	50,250	-----	-----	-----	-----	-----
4,400	1,600	7,040,000	.14	985,600	-----	-----	-----	-----	-----
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13,400	1,650	22,110,000	.165	3,648,150	-----	-----	-----	-----	-----
6,000	1,175	7,050,000	.08	564,000	-----	-----	-----	-----	-----
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31,200	985	30,732,000	.09	2,765,880	-----	-----	-----	-----	-----
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25,000	710	17,750,000	.083	1,473,250	-----	-----	-----	-----	-----
155,000	775	120,125,000	.085	10,210,625	-----	-----	-----	-----	-----
14,400	875	12,600,000	.132	1,663,200	-----	-----	-----	-----	-----
240,000	600	144,000,000	.095	13,680,000	425	30.2	13,000	$ .85	$ 11,000
40,000	800	32,000,000	.073	2,336,000	18,000	25.6	476,000	.91	433,000
2,100	700	1,470,000	.34	499,800	4,200	23.9	100,000	.87	87,000
4,500	710	3,195,000	.34	1,086,300	1,000	25.0	25,000	.80	20,000
90,000	925	83,250,000	.105	8,741,250	-----	-----	-----	-----	-----
20,000	950	19,000,000	.11	2,090,000	-----	-----	-----	-----	-----
1,500	750	1,125,000	.11	123,750	-----	-----	-----	-----	-----
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31,500	1,180	37,170,000	.092	3,419,640	-----	-----	-----	-----	-----
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5,000	885	4,425,000	.13	575,250	-----	-----	-----	-----	-----
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420,000	835	350,700,000	.106	37,174,200	-----	-----	-----	-----	-----
73,000	730	53,290,000	.078	4,156,620	-----	-----	-----	-----	-----
600	600	360,000	.29	104,400	1,000	35.0	35,000	.80	28,000
100	500	50,000	.26	13,000	1,000	30.0	30,000	.80	24,000
400	550	220,000	.37	81,400	375,000	33.8	12,675,000	.79	10,013,000
1,000	650	650,000	.262	170,300	291,000	34.0	9,894,000	.78	7,717,000
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900	600	540,000	.15	81,000	28,000	40.0	1,120,000	.90	1,008,000
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1,180,300	804.3	949,357,000	$.101	$ 95,719,365	720,225	33.8	24,368,000	$79.4	$ 19,341,000

STATISTICS OF THE PRINCIPAL CROPS.

(Figures furnished by the Bureau of Statistics, Department of Agriculture, except where otherwise credited. All prices on gold basis.)

CORN.

Corn crop of countries named, 1904-1908.

Country	1904 Bushels	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels
NORTH AMERICA.					
United States	2,467,481,000	2,707,994,000	2,927,416,000	2,592,320,000	2,668,651,000
Ontario	20,242,000	20,923,000			
Canada:			23,989,000	21,899,000	21,742,000
Quebec				1,377,000	1,126,000
Mexico	88,131,000	83,363,000	70,000,000	70,000,000	70,000,000
Total	2,575,854,000	2,812,280,000	3,021,405,000	2,685,596,000	2,761,519,000
SOUTH AMERICA.					
Argentina	175,189,000	140,708,000	194,912,000	71,768,000	136,057,000
Chile	1,477,000	1,244,000	846,000	1,500,000	1,344,000
Uruguay	3,035,000	4,417,000	3,226,000	5,359,000	6,000,000
Total	179,701,000	146,369,000	198,984,000	78,627,000	143,401,000
EUROPE.					
Austria-Hungary:					
Austria	12,529,000	17,293,000	18,177,000	16,599,000	15,170,000
Hungary proper	59,400,000	94,045,000	162,925,000	155,619,000	146,124,000
Croatia-Slavonia	11,364,000	18,385,000	20,470,000	17,934,000	20,536,000
Bosnia-Herzegovina	6,464,000	9,584,000	8,900,000	6,468,000	8,821,000
Total Austria-Hungary	89,757,000	139,307,000	210,472,000	196,620,000	190,651,000
Bulgaria	12,758,000	18,141,000	27,780,000	14,080,000	20,717,000
France	19,482,000	24,030,000	14,581,000	24,027,000	24,000,000
Italy	90,546,000	97,266,000	93,007,000	88,513,000	95,953,000
Portugal	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000
Roumania	19,598,000	59,275,000	130,546,000	57,576,000	78,892,000
Russia:					
Russia proper	18,956,000	22,533,000	59,320,000	41,903,000	49,663,000
Poland	13,000			1,000	
Northern Caucasia	6,951,000	10,798,000	11,181,000	8,860,000	11,449,000
Total Russia (European)	25,920,000	33,331,000	70,501,000	50,764,000	61,112,000
Servia	9,498,000	21,431,000	27,786,000	17,691,000	21,010,000
Spain	21,255,000	31,880,000	18,714,000	25,372,000	20,115,000
Total	303,814,000	439,661,000	608,387,000	489,643,000	527,450,000
AFRICA.					
Algeria	391,000	490,000	544,000	402,000	400,000
Cape of Good Hope	3,502,000	2,500,000	3,200,000	3,550,000	1,758,000
Egypt	30,000,000	30,000,000	30,000,000	35,000,000	30,000,000
Natal	5,282,000	4,822,000	3,845,000	2,984,000	4,593,000
Sudan (Anglo-Egyptian)	189,000	320,000	300,000	300,000	300,000
Total	39,364,000	38,132,000	37,889,000	42,236,000	37,051,000
AUSTRALASIA.					
Australia:					
Queensland	1,984,000	2,623,000	2,233,000	3,820,000	3,191,000
New South Wales	7,052,000	5,107,000	5,714,000	5,945,000	4,671,000

CORN—CONTINUED

Country	1904 Bushels	1905 Bushels	1906 Bushels	1907 Bushels	19 8 Bushels
Victoria	933,000	643,000	661,000	727,000	525,000
Western Australia	3,000	1,000	1,000	1,000	1,000
Total Australia	9,972,000	8,374,000	8,609,000	10,493,000	8,388,000
New Zealand	547,000	506,000	653,000	419,000	519,000
Total Australasia	10,519,000	8,880,000	9,262,000	10,912,000	8,907,000
Grand total	3,109,252,000	3,445,322,000	3,875,927,000	3,307,014,000	3,478,328,000

WHEAT.

Wheat crop of countries named, 1905-1909.

County	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
NORTH AMERICA.					
United States	692,979,000	735,261,000	634,087,000	664,602,000	737,189,000
Canada:					
New Brunswick	405,000	407,000	411,000	349,000	395,000
Ontario	21,517,000	22,109,000	18,019,000	18,057,000	16,262,000
Manitoba	55,761,000	61,250,000	39,688,000	50,269,000	52,706,000
Saskatchewan	26,107,000	37,040,000	27,692,000	34,742,000	85,197,000
Alberta	2,307,000	3,966,000	4,194,000	6,842,000	9,579,000
Other	3,000,000	3,000,000	2,687,000	2,175,000	2,605,000
Total Canada	109,097,000	127,772,000	92,691,000	112,434,000	166,744,000
Mexico	9,710,000	8,000,000	9,000,000	8,000,000	8,000,000
Total	811,786,000	871,033,000	735,778,000	785,036,000	911,933,000
SOUTH AMERICA.					
Argentina	150,745,000	134,951,000	155,993,000	192,489,000	161,672,000
Chile	12,089,000	12,137,000	15,776,000	18,915,000	20,000,000
Uruguay	7,565,000	4,606,000	6,867,000	7,430,000	8,000,000
Total	170,399,000	151,694,000	178,636,000	218,834,000	189,672,000
EUROPE.					
Austria-Hungary:					
Austria	54,531,000	58,255,000	52,369,000	62,129,000	58,468,000
Hungary proper	157,514,000	197,409,000	120,509,000	152,205,000	113,352,000
Croatia-Slavonia	13,077,000	10,351,000	10,170,000	13,220,000	11,662,000
Bosnia-Herzegovina	3,016,000	2,693,000	2,169,000	3,023,000	2,594,000
Total Austria-Hungary	228,138,000	268,708,000	185,217,000	230,577,000	186,076,000
Belgium	12,401,000	12,964,000	15,835,000	13,963,000	15,506,000
Bulgaria	34,949,000	39,109,000	23,545,000	36,496,000	37,000,000
Denmark	4,067,000	4,161,000	4,343,000	4,318,000	4,000,000
Finland	129,000	150,000	135,000	135,000	135,000
France	335,453,000	324,919,000	376,999,000	317,765,000	356,641,000
Germany	135,947,000	144,754,000	127,843,000	138,442,000	138,000,000
Greece	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Italy	160,504,000	176,464,000	177,543,000	152,236,000	164,587,000
Montenegro	200,000	200,000	200,000	200,000	200,000
Netherlands	5,078,000	4,942,000	5,325,000	5,121,000	5,000,000
Norway	329,000	303,000	290,000	333,000	316,000
Portugal	5,000,000	9,000,000	6,000,000	5,000,000	5,000,000
Roumania	103,328,000	113,867,000	42,257,000	54,813,000	56,751,000
Russia:					
Russia proper	451,327,000	344,765,000	340,416,000	383,016,000	----------
Poland	20,239,000	21,152,000	18,173,000	21,182,000	----------
Northern Caucasia	96,708,000	85,046,000	79,184,000	34,964,000	----------
Total Russia (European)	568,274,000	450,963,000	437,773,000	489,162,000	711,479,000

WHEAT—Continued.

Country	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
Servia	11,262,000	13,211,000	8,375,000	11,495,000	13,000,000
Spain	92,504,000	140,656,000	100,331,000	119,970,000	144,105,000
Sweden	5,529,000	6,650,000	6,279,000	6,756,000	6,978,000
Switzerland	4,000,000	4,000,000	4,000,000	3,527,000	3,568,000
Turkey (European)	20,000,000	25,000,000	18,000,000	25,000,000	30,000,000
United Kingdom:					
Great Britain—					
England	57,424,000	57,583,000	53,855,000	51,371,000	60,241,000
Scotland	2,131,000	2,063,000	1,953,000	1,854,000	2,111,000
Wales	1,204,000	1,308,000	1,138,000	966,000	1,147,000
Ireland	1,475,000	1,575,000	1,367,000	1,438,000	1,809,000
Total United Kingdom	62,234,000	62,529,000	58,313,000	55,629,000	65,308,000
Total	1,797,326,000	1,810,550,000	1,606,603,000	1,678,938,000	1,951,583,000
ASIA.					
British India, including such native states as report	283,063,000	319,952,000	317,023,000	227,983,000	283,360,000
Cyprus	2,441,000	2,410,000	2,636,000	2,601,000	2,600,000
Japanese Empire:					
Japan	18,437,000	20,282,000	22,795,000	22,587,000	22,035,000
Formosa	200,000	178,000	200,000	200,000	200,000
Total Japanese Empire	18,637,000	20,460,000	22,995,000	22,587,000	22,235,000
Persia	16,000,000	16,000,000	16,000,000	16,000,000	16,000,000
Russia:					
Central Asia	25,491,000	11,486,000	27,085,000	21,416,000	-------------
Siberia	42,411,000	45,833,000	45,771,000	55,755,000	-------------
Transcaucasia	109,000	108,000	63,000	66,000	-------------
Total Russia (Asiatic)	68,011,000	57,427,000	72,919,000	77,237,000	71,792,000
Turkey (Asiatic)	35,000,000	35,000,000	35,000,000	35,000,000	35,000,000
Total Asia	423,152,000	451,249,000	466,573,000	381,608,000	430,987,000
AFRICA.					
Algeria	25,579,000	34,323,000	31,261,000	30,000,000	34,769,000
Cape of Good Hope	2,000,000	2,000,000	2,000,000	1,916,000	2,257,000
Egypt	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000
Natal	4,000	8,000	3,000	3,000	5,000
Sudan (Anglo-Egyptian)	483,000	542,000	500,000	500,000	500,000
Tunis	5,729,000	4,906,000	6,314,000	2,838,000	4,000,000
Total Africa	58,795,000	66,779,000	65,078,000	60,257,000	66,531,000
AUSTRALASIA.					
Australia:					
Queensland	2,217,000	1,173,000	1,144,000	715,000	1,241,000
New South Wales	16,983,000	21,391,000	22,506,000	9,444,000	15,971,000
Victoria	21,666,000	24,156,000	23,331,000	12,482,000	24,082,000
South Australia	12,454,000	20,778,000	18,017,000	19,739,000	20,009,000
Western Australia	2,077,000	2,381,000	2,845,000	3,018,000	2,535,000
Tasmania	818,000	801,000	672,000	665,000	825,000
Total Australia	56,215,000	70,680,000	68,515,000	46,063,000	64,663,000
New Zealand	9,411,000	7,013,000	5,782,000	5,743,000	9,049,000
Total Australasia	65,626,000	77,693,000	74,297,000	51,806,000	73,712,000
Grand Total	3,327,084,000	3,428,998,000	3,126,965,000	3,176,479,000	3,624,418,000

OATS.

Oat crop of countries named, 1905-1909.

Country	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
NORTH AMERICA.					
United States	953,216,000	964,905,000	754,443,000	807,156,000	1,007,353,000
Canada:					
New Brunswick	5,829,000	6,052,000	6,107,000	5,373,000	6,136,000
Ontario	112,161,000	115,113,000	88,745,000	110,310,000	116,017,000
Manitoba	48,327,000	53,861,000	44,775,000	47,506,000	58,721,000
Saskatchewan	20,414,000	25,463,000	24,783,000	31,030,000	97,533,000
Alberta	10,109,000	13,958,000	9,826,000	24,227,000	40,775,000
Other	45,688,000	45,687,000	54,981,000	47,580,000	56,376,000
Total Canada	242,528,000	260,134,000	229,217,000	266,026,000	375,558,000
Mexico	17,000	17,000	17,000	17,000	17,000
Total	1,195,761,000	1,225,056,000	983,677,000	1,073,199,000	1,382,928,000
EUROPE.					
Austria-Hungary:					
Austria	123,880,000	154,551,000	170,605,000	144,069,000	171,940,000
Hungary proper	78,009,000	87,733,000	79,484,000	70,168,000	92,270,000
Croatia-Slavonia	6,075,000	5,541,000	4,174,000	4,253,000	5,607,000
Bosnia-Herzegovina	2,935,000	3,543,000	2,575,000	3,572,000	4,575,000
Total Austria-Hungary	210,899,000	251,368,000	256,838,000	222,062,000	274,392,000
Belgium	33,786,000	45,228,000	45,937,000	42,232,000	40,000,000
Bulgaria	9,381,000	11,884,000	7,416,000	11,252,000	12,000,000
Denmark	31,763,000	38,726,000	42,529,000	40,437,000	39,000,000
Finland	18,060,000	19,614,000	18,000,000	19,000,000	18,000,000
France	269,581,000	256,943,000	303,889,000	285,837,000	339,743,000
Germany	451,017,000	580,875,000	630,324,000	530,131,000	628,718,000
Italy	16,000,000	18,000,000	20,000,000	17,000,000	16,000,000
Netherlands	16,045,000	19,588,000	20,933,000	19,683,000	19,000,000
Norway	9,868,000	9,297,000	6,946,000	13,449,000	10,339,000
Roumania	18,974,000	26,165,000	17,842,000	17,212,000	25,945,000
Russia:					
Russia Proper	767,550,000	544,933,000	729,813,000	743,523,000	--------------
Poland	61,933,000	66,425,000	72,574,000	66,135,000	--------------
Northern Caucasia	22,184,000	21,933,000	19,697,000	24,860,000	--------------
Total Russia (European)	851,667,000	633,291,000	822,084,000	834,518,000	1,067,668,000
Servia	3,549,000	4,642,000	2,984,000	3,057,000	3,000,000
Spain	22,250,000	28,077,000	16,998,000	28,114,000	34,357,000
Sweden	58,488,000	64,550,000	64,597,000	72,773,000	69,292,000
United Kingdom:					
Great Britain—					
England	76,453,000	84,102,000	94,606,000	82,470,000	80,711,000
Scotland	36,390,000	35,108,000	36,193,000	37,920,000	39,096,000
Wales	7,264,000	8,063,000	7,829,000	7,133,000	7,254,000
Ireland	51,420,000	53,111,000	50,850,000	54,032,000	57,467,000
Total United Kingdom	171,527,000	180,384,000	189,478,000	181,555,000	184,528,000
Total	2,192,855,000	2,188,632,000	2,466,795,000	2,338,312,000	2,781,932,000
ASIA.					
Cyprus	402,000	359,000	331,000	410,000	400,000
Russia:					
Central Asia	14,279,000	9,805,000	18,049,000	17,371,000	------------
Siberia	70,673,000	69,873,000	67,114,000	89,500,000	--------------
Transcaucasia	44,000	35,000	13,000	27,000	------------
Total Russia (Asiatic)	84,996,000	79,713,000	85,176,000	106,898,000	77,705,000
Total	85,398,000	80,072,000	85,507,000	107,308,000	78,105,000

OATS—CONTINUED.

Country	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
AFRICA.					
Algeria	7,036,000	9,379,000	10,651,000	8,500,000	10,673,000
Cape of Good Hope	3,000,000	3,000,000	3,000,000	2,596,000	4,063,000
Natal	9,000	7,000	5,000	6,000	7,000
Tunis	2,032,000	2,411,000	3,149,000	1,736,000	2,000,000
Total	12,077,000	14,797,000	16,805,000	12,838,000	16,743,000
AUSTRALASIA.					
Australia:					
Queensland	16,000	6,000	30,000	10,000	40,000
New South Wales	673,000	911,000	1,449,000	879,000	1,154,000
Victoria	6,353,000	7,460,000	9,124,000	5,365,000	11,475,000
South Australia	573,000	897,000	924,000	902,000	1,320,000
Western Australia	233,000	293,000	472,000	745,000	765,000
Tasmania	1,216,000	1,238,000	2,042,000	1,574,000	1,900,000
Total Australia	9,064,000	10,805,000	14,041,000	9,475,000	16,654,000
New Zealand	15,012,000	13,108,000	11,555,000	15,495,000	19,503,000
Total Australasia	24,076,000	23,913,000	25,596,000	24,970,000	36,157,000
Grand total	3,510,167,000	3,532,470,000	3,578,380,000	3,556,627,000	4,295,865,000

BARLEY.

Barley crop of countries named, 1905-1909.

NORTH AMERICA.					
United States	136,651,000	178,916,000	153,597,000	166,756,000	170,284,000
Canada:					
New Brunswick	97,000	99,000	97,000	79,000	94,000
Ontario	24,265,000	25,253,000	21,718,000	21,124,000	20,952,000
Manitoba	14,064,000	17,533,000	16,753,000	17,093,000	20,866,000
Saskatchewan	894,000	1,316,000	1,350,000	1,952,000	4,493,000
Alberta	1,774,000	2,158,000	1,083,000	3,881,000	5,999,000
Other	3,000,000	3,000,000	3,341,000	2,633,000	2,994,000
Total Canada	44,094,000	49,359,000	44,342,000	46,762,000	55,398,000
Mexico	6,621,000	7,000,000	7,000,000	7,000,000	7,000,000
Total	187,366,000	235,275,000	204,939,000	220,518,000	232,682,000
EUROPE.					
Austria-Hungary:					
Austria	70,469,000	76,024,000	78,555,000	69,497,000	79,654,000
Hungary proper	62,453,000	69,747,000	63,078,000	56,324,000	71,868,000
Croatia-Slavonia	2,864,000	2,758,000	2,064,000	2,552,000	2,394,000
Bosnia-Herzegovina	3,236,000	3,276,000	2,388,000	2,389,000	3,755,000
Total Austria-Hungary	139,022,000	151,805,000	146,085,000	130,762,000	157,671,000
Belgium	4,518,000	4,349,000	5,129,000	4,423,000	5,000,000
Bulgaria	11,431,000	12,008,000	6,772,000	11,311,000	12,000,000
Denmark	19,596,000	19,975,000	21,616,000	20,166,000	21,000,000
Finland	5,318,000	5,424,000	5,000,000	6,000,000	5,000,000
France	40,841,000	36,538,000	43,043,000	40,673,000	47,782,000
Germany	134,204,000	142,901,000	160,650,000	140,539,000	160,552,000
Italy	8,000,000	8,000,000	8,000,000	9,000,000	10,000,000
Netherlands	4,013,000	3,260,000	4,091,000	3,953,000	4,000,000
Norway	3,464,000	3,262,000	2,597,000	3,540,000	2,885,000
Roumania	26,383,000	33,539,000	20,062,000	12,873,000	19,955,000

BARLEY—Continued.

Country	1904 Bushels	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels
Russia:					
Russia proper	272,694,000	243,619,000	277,500,000	297,449,000	
Poland	22,732,000	23,351,000	25,395,000	23,790,000	
Northern Caucasia	43,410,000	37,306,000	41,206,000	46,219,000	
Total Russia (European)	338,836,000	304,276,000	344,101,000	367,458,000	464,733,000
Servia	3,670,000	4,848,000	3,137,000	3,351,000	4,000,000
Spain	45,917,000	90,264,000	53,598,000	69,596,000	81,579,000
Sweden	12,858,000	14,328,000	12,811,000	15,720,000	13,900,000
United Kingdom:					
Great Britain—					
England	48,778,000	51,543,000	51,926,000	46,353,000	52,348,000
Scotland	8,257,000	7,803,000	7,466,000	7,410,000	7,732,000
Wales	2,906,000	3,116,000	2,881,000	2,682,000	2,810,000
Ireland	7,111,000	7,144,000	6,934,000	7,064,000	8,258,000
Total United Kingdom	67,052,000	69,606,000	69,207,000	63,509,000	71,148,000
Total	865,123,000	904,383,000	905,899,000	902,674,000	1,081,205,000
ASIA.					
Cyprus	2,980,000	2,778,000	2,963,000	2,420,000	2,500,000
Japanese Empire:					
Japan	77,473,000	83,967,000	90,480,000	87,138,000	88,142,000
Formosa	50,000	49,000	50,000	50,000	50,000
Total Japanese Empire	77,523,000	84,016,000	90,530,000	87,188,000	88,192,000
Russia:					
Central Asia	3,145,000	2,613,000	4,385,000	4,266,000	
Siberia	4,965,000	5,136,000	4,957,000	6,103,000	
Transcaucasia	20,000	13,000	4,000	13,000	
Total Russia (Asiatic)	8,130,000	7,762,000	9,346,000	10,382,000	8,884,000
Total	88,633,000	94,556,000	102,839,000	99,990,000	99,576,000
AFRICA.					
Algeria	27,330,000	47,600,000	41,543,000	35,000,000	50,008,000
Cape of Good Hope	900,000	900,000	900,000	760,000	873,000
Natal	7,000	5,000	5,000	7,000	6,000
Sudan (Anglo-Egyptian)	327,000	334,000	300,000	300,000	300,000
Tunis	7,119,000	7,863,000	9,506,000	5,057,000	8,000,000
Total	35,683,000	56,702,000	52,254,000	41,114,000	59,187,000
AUSTRALASIA.					
Australia:					
Queensland	342,000	64,000	163,000	67,000	142,000
New South Wales	275,000	115,000	158,000	77,000	172,000
Victoria	902,000	1,095,000	1,295,000	1,093,000	1,706,000
South Australia	358,000	522,000	507,000	585,000	852,000
Western Australia	39,000	51,000	50,000	79,000	77,000
Tasmania	168,000	97,000	146,000	154,000	190,000
Total Australia	2,084,000	1,944,000	2,319,000	2,055,000	3,139,000
New Zealand	1,164,000	1,056,000	1,068,000	1,200,000	2,000,000
Total Australasia	3,248,000	3,000,000	3,387,000	3,255,000	5,139,000
Grand total	1,180,053,000	1,293,916,000	1,269,318,000	1,267,551,000	1,477,789,000

RYE.

Rye crop of countries named, 1905-1909.

Country	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
NORTH AMERICA.					
United States	28,486,000	33,375,000	31,566,000	31,851,000	32,239,000
Canada:					
Ontario	1,715,000	1,327,000	1,039,000	1,030,000	1,097,000
Manitoba	173,000	101,000	84,000	101,000	75,000
Other	500,000	500,000	371,000	580,000	543,000
Total Canada	2,388,000	1,928,000	1,494,000	1,711,000	1,715,000
Mexico	70,000	70,000	70,000	70,000	70,000
Total	30,944,000	35,373,000	33,130,000	33,632,000	34,024,000
EUROPE.					
Austria-Hungary:					
Austria	98,186,000	99,246,000	86,452,000	113,309,000	114,433.000
Hungary proper	50,544,000	51,962.000	39,445,000	45,185.000	44,858.000
Croatia-Slavonia	2,537,000	1,918,000	2,136.000	2,520.000	2,393,000
Bosnia-Herzegovina	374,000	388,000	271,000	298,000	368,000
Total Austria-Hungary	151,641,000	153,514,000	128,304,000	161,312,000	162,052,000
Belgium	21,349,000	20,569,000	23,484,000	21,849,000	20,000,000
Bulgaria	7,113,000	7,538.000	3,883,000	5,604,000	5,000,000
Denmark	19,249,000	18,828,000	15,893.000	19,170,000	18,000,000
Finland	11,552,000	11,927,000	11,000,000	12,000,000	11,000,000
France	58,116,000	50,429,000	55,896,000	51,703,000	56,643.000
Germany	378,204,000	378,948,000	384,150,000	422,692,000	446,767,000
Italy	4,000,000	4,000,000	4,000.000	3,000,000	3,000,000
Netherlands	13,742.000	13,938,000	14,483.000	15,866,000	15,000.000
Norway	982,000	963,000	823,000	848.000	988,000
Roumania	7,344,000	8,900,000	2,554,000	2,640,000	3,090.000
Russia:					
Russia proper	629,671,000	555,698,000	693,257.000	673,736,000	-------------
Poland	69,088,000	74,100,000	74,127,000	77,954,000	-------------
Northern Caucasia	9,933,000	8,877,000	6,807,000	6,993,000	-------------
Total Russia (European)	708,692,000	638,675,000	774,191,000	758,683,000	877,168,000
Servia	1,103,000	1,560,000	911,000	974,000	1,500,000
Spain	26,502,000	30,918,000	27,027,000	26,412,000	34,901,000
Sweden	24,393,000	25,915,000	22,001,000	26,052,000	25,728,000
United Kingdom	1,956,000	2,073,000	1,895,000	1,776,000	1,954,000
Total	1,435,938,000	1,368,695,000	1,470,495,000	1,530,581,000	1,682,791,000
ASIA.					
Russia:					
Central Asia	690,000	404,000	993,000	564,000	-------------
Siberia	28,043.000	27,752.000	32,931.000	22,775,000	-------------
Transcaucasia	17,000	13,000	12,000	9,000	-------------
Total Russia (Asiatic)	28,750,000	28,169,000	33,936,000	23,348,000	19,667,000
AUSTRALASIA.					
Australia:					
Queensland	2,000	1,000	3,000	1,000	1,000
New South Wales	35,000	50,000	98,000	56,000	51,000
Victoria	32,000	30,000	21,000	22,000	33,000
Western Australia	5,000	4,000	5,000	5,000	4,000
Tasmania	12,000	8,000	15,000	15,000	18,000
Total Australia	86,000	93,000	142,000	99,000	107,000

RYE—CONTINUED

County	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
New Zealand	33,000	65,000	43,000	73,000	94,000
Total Australasia	119,000	158,000	185,000	172,000	201,000
Grand total	1,495,751,000	1,432,395,000	1,537,746,000	1,587,733,000	1,736,683,000

POTATOES.

Potato crop of countries named, 1904-1908.

(No statistics for Switzerland, Portugal, Argentina, Transvaal, Egypt, and some other less important potato-growing countries.)

Country	1904 Bushels	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels
NORTH AMERICA.					
United States	332,830,000	260,741,000	308,038,000	298,262,000	278,985,000
Canada:					
Ontario	15,967,000	14,819,000	15,494,000	20,908,000	23,096,000
Manitoba	3,919,000	2,901,000	4,281,000	4,150,000	3,807,000
New Brunswick	5,550,000	5,693,000	5,522,000	5,183,000	11,203,000
Saskatchewan & Alberta	*a* 1,000,000	2,844,000	5,507,000	5,338,000	3,793,000
Other	*a* 29,000,000	*a* 29,000,000	*a* 29,000,000	36,657,000	32,847,000
Total Canada	55,436,000	55,257,000	59,804,000	72,236,000	74,746,000
Mexico	527,000	469,000	*b* 469,000	*b* 469,000	*b* 469,000
Newfoundland *a*	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000
Total	390,143,000	317,817,000	369,661,000	372,317,000	355,550,000
SOUTH AMERICA.					
Chile	6,131,000	6,532,000	*b* 6,532,000	*b* 6,532,000	8,063,000
EUROPE.					
Austria-Hungary:					
Austria	398,298,000	581,822,000	514,289,000	538,789,000	475,860,000
Hungary proper	110,402,000	168,225,000	179,083,000	178,168,000	139,469,000
Croatia-Slavonia	9,311,000	12,589,000	12,854,000	25,625,000	21,129,000
Bosnia-Herzegovina	2,450,000	2,485,000	2,328,000	2,949,000	*c* 2,949,000
Total Austria-Hungary	520,461,000	765,121,000	708,554,000	745,531,000	639,407,000
Belgium	91,632,000	57,159,000	88,652,000	88,192,000	82,846,000
Denmark	24,214,000	29,954,000	28,454,000	24,005,000	29,752,000
Finland	15,465,000	20,704,000	20,432,000	*d* 20,432,000	*d* 20,432,000
France	451,039,000	523,876,000	372,076,000	404,181,000	375,000,000
Germany	1,333,326,000	1,775,579,000	1,577,653,000	1,673,246,000	1,702,803,000
Italy *e*	29,000,000	29,000,000	29,000,000	29,000,000	29,000,000
Malta	733,000	387,000	378,000	793,000	692,000
Netherlands	94,421,000	87,043,000	95,503,000	94,401,000	96,695,000
Norway	17,253,000	25,832,000	20,995,000	16,956,000	28,030,000
Roumania	3,001,000	3,733,000	4,636,000	3,860,000	4,310,000
Russia:					
Russia proper	705,170,000	686,502,000	630,211,000	694,487,000	682,454,000
Poland	179,997,000	331,529,000	296,662,000	327,689,000	366,433,000
Northern Caucasia	8,741,000	14,857,000	12,844,000	11,932,000	11,248,000
Total Russia (European)	893,908,000	1,032,888,000	939,717,000	1,034,108,000	1,060,135,000
Servia	718,000	1,232,000	1,799,000	876,000	645,000
Spain *e*	84,000,000	84,000,000	84,000,000	84,000,000	84,000,000
Sweden	51,314,000	74,819,000	63,829,000	57,823,000	78,020,000

POTATOES—CONTINUED

County	1904 Bushels	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels
United Kingdom:					
Great Britain	133,961,000	140,474,000	128,005,000	111,159,000	146,258,000
Ireland	98,635,000	127,793,000	99,328,000	83,869,000	119,455,000
Total Great Britain and Ireland	232,596,000	268,267,000	227,333,000	195,028,000	265,713,000
Total	3,843,081,000	4,779,594,000	4,263,011,000	4,472,432,000	4,497,480,000
ASIA.					
Japan	11,274,000	16,255,000	18,691,000	21,023,000	*c* 21,023,000
Russia (Asiatic)	18,800,000	18,865,000	16,481,000	17,076,000	22,588,000
Total	30,074,000	35,120,000	35,172,000	38,099,000	43,611,000
AFRICA.					
Algeria	1,655,000	1,605,000	1,684,000	1,803,000	*c* 1,803,000
Cape of Good Hope	1,942,000	*f* 1,500,000	*f* 1,500,000	*f* 1,500,000	1,304,000
Natal	451,000	466,000	454,000	444,000	405,000
Total	4,048,000	3,571,000	3,638,000	3,747,000	3,512,000
AUSTRALASIA.					
Australia:					
Queensland	659,000	718,000	422,000	591,000	492,000
New South Wales	2,118,000	1,820,000	1,881,000	4,288,000	2,086,000
Victoria	6,262,000	3,467,000	4,307,000	6,229,000	5,044,000
South Australia	1,173,000	729,000	756,000	832,000	756,000
Western Australia	170,000	210,000	235,000	188,000	212,000
Tasmania	6,395,000	4,127,000	2,412,000	6,807,000	5,431,000
Total Australia	16,777,000	11,071,000	10,013,000	18,935,000	14,021,000
New Zealand	7,795,000	5,025,000	4,607,000	6,342,000	5,339,000
Total Australasia	24,572,000	16,096,000	14,620,000	25,277,000	19,360,000
Grand total	4,298,049,000	5,158,730,000	4,692,634,000	4,918,404,000	4,927,576,000

a Estimated from returns for census year.
b Data for 1905.
c Data for 1907.
d Data for 1906.
e Average production.
f Estimated.

Agricultural Building Iowa State Fair and Exposition Grounds

ESTIMATED NUMBER, AVERAGE PRICE, AND TOTAL VALUE OF FARM

(Figures taken from February Num

Number	State, Territory, or Division	Horses					
		Number January 1, 1910		Average price per head January 1			Total value January 1, 1910
		Per cent a	Total	1910	1909	Ten-year average	
1	Maine	102	119,000	$125.00	$107.00	$86.47	$14,875,000
2	New Hampshire	100	59,000	106.00	98.00	82.04	6,254,000
3	Vermont	102	94,000	106.00	103.00	82.98	9,964,000
4	Massachusetts	101	84,000	128.00	116.00	98.62	10,752,000
5	Rhode Island	100	14,000	129.00	126.00	102.31	1,806,000
6	Connecticut	101	62,000	126.00	123.00	96.85	7,812,000
7	New York	101	717,000	125.00	114.00	93.74	89,625,000
8	New Jersey	101	103,000	134.00	124.00	101.62	13,802,000
9	Pennsylvania	100	619,000	132.00	116.00	91.91	81,708,000
10	Delaware	103	38,000	106.00	100.00	82.55	4,028,000
11	Maryland	101	160,000	108.00	100.00	78.51	17,280,000
12	Virginia	103	323,000	107.00	100.00	75.21	34,561,000
13	West Virginia	101	197,000	112.00	102.00	75.18	22,064,000
14	North Carolina	100	192,000	121.00	110.00	85.50	23,232,000
15	South Carolina	102	87,000	127.00	121.00	92.67	11,049,000
16	Georgia	101	141,000	125.00	116.00	91.70	17,625,000
17	Florida	102	55,000	109.00	104.00	77.94	5,995,000
18	Ohio	102	977,000	129.00	113.00	88.45	126,033,000
19	Indiana	102	847,000	122.00	107.00	84.14	103,334,000
20	Illinois	102	1,655,000	124.00	109.00	84.46	205,220,000
21	Michigan	101	746,000	126.00	110.00	87.90	93,996,000
22	Wisconsin	101	669,000	121.00	107.00	87.52	80,949,000
23	Minnesota	102	767,000	111.00	100.00	79.11	85,137,000
24	*Iowa	102	1,447,000	120.00	103.00	77.96	173,640,000
25	Missouri	101	1,005,000	103.00	90.00	68.12	103,515,000
26	North Dakota	105	712,000	114.00	101.00	75.91	81,168,000
27	South Dakota	103	612,000	105.00	93.00	63.40	64,260,000
28	Nebraska	101	1,045,000	108.00	91.00	66.17	112,860,000
29	Kansas	103	1,187,000	107.00	89.00	66.21	127,009,000
30	Kentucky	102	407,000	105.00	95.00	72.17	42,735,000
31	Tennessee	100	324,000	112.00	103.00	74.56	36,288,000
32	Alabama	102	171,000	95.00	88.00	69.99	16,245,000
33	Mississippi	100	265,000	85.00	78.00	62.02	22,525,000
34	Louisiana	100	233,000	79.00	65.00	53.73	18,407,000
35	Texas	102	1,369,000	73.00	71.00	42.72	99,937,000
36	Oklahoma	103	804,000	81.00	73.00	50.55	65,124,000
37	Arkansas	99	290,000	82.00	72.00	55.24	23,780,000
38	Montana	105	319,000	80.00	65.00	41.85	25,520,000
39	Wyoming	110	148,000	83.00	65.00	37.99	12,284,000
40	Colorado	102	280,000	85.00	72.00	48.63	23,800,000
41	New Mexico	102	133,000	47.00	41.00	28.19	6,251,000
42	Arizona	104	115,000	62.00	53.00	32.46	7,130,000
43	Utah	104	130,000	85.00	72.00	43.55	11,050,000
44	Nevada	102	98,000	78.00	70.00	47.88	7,644,000
45	Idaho	103	163,000	102.00	82.00	47.62	16,626,000
46	Washington	103	330,000	108.00	101.00	68.47	35,640,000
47	Oregon	103	308,000	103.00	92.00	59.38	31,724,000
48	California	102	420,000	105.00	90.00	69.07	44,100,000
	United States	101.9	21,040,000	$108.19	$95.64	$71.99	$2,276,363,000

ANIMALS IN THE UNITED STATES JANUARY 1, 1910, WITH COMPARISONS.

ber United States Crop Reporter.)

Milch Cows						Other Cattle						
Number January 1, 1910		Average price per head Jan. 1			Total value January 1, 1910	Number January 1, 1910		Average price per head Jan.			Total value January 1, 1910	
Per cent a	Total	1910	1909	Ten-year average		Per cent a	Total	1910	1909	Ten-year average		Number
98	175,000	$33.00	$29.00	[illegible]	5,775,000	96	139,000	$16.90	$15.00	$17.37	$2,349,000	1
98	122,000	36.20	32.00	32.14	4,416,000	96	93,000	20.30	18.00	17.88	1,888,000	2
99	285,000	34.20	30.00	28.17	9,747,000	98	210,000	14.40	13.50	14.88	3,024,000	3
99	[illegible]	[illegible]	40.00	38.63	8,064,000	98	88,000	16.70	16.00	17.72	1,470,000	4
99	26,000	43.80	43.00	40.41	1,139,000	[illegible]	10,000	17.50	18.00	19.57	175,000	5
100	137,000	41.00	38.00	36.53	5,617,000	[illegible]	81,000	19.10	17.50	20.15	1,547,000	6
[illegible]	1,771,000	39.50	[illegible]	33.82	69,954,000	[illegible]	889,000	18.20	16.50	17.81	16,180,000	7
100	190,000	47.50	45.50	40.92	9,025,000	[illegible]	82,000	21.40	20.50	21.30	1,755,000	8
99	1,140,000	39.00	37.00	[illegible]	44,460,000	[illegible]	917,000	19.20	18.50	18.87	17,606,000	9
100	38,000	38.00	36.00	32.44	1,444,000	101	22,000	21.00	19.50	19.67	462,000	10
101	160,000	37.30	33.00	30.30	5,968,000	[illegible]	138,000	21.10	20.00	19.33	2,912,000	11
101	297,000	29.70	28.75	25.66	8,821,000	[illegible]	578,000	19.40	18.50	18.54	11,213,000	12
100	247,000	35.00	32.50	29.53	8,645,000	95	511,000	22.50	21.50	21.18	11,498,000	12
101	297,000	25.50	25.00	21.90	7,574,000	[illegible]	449,000	12.50	11.50	10.91	5,612,000	14
[illegible]	140,000	28.90	27.00	24.33	4,046,000	101	227,000	12.00	11.50	10.76	2,724,000	15
101	314,000	25.00	23.50	24.01	7,850,000	99	673,000	10.30	9.50	10.09	6,932,000	16
102	95,000	32.50	26.50	23.39	3,088,000	103	712,000	10.30	10.00	9.37	7,334,000	17
[illegible]	947,000	42.80	37.75	33.46	40,532,000	98	978,000	24.10	22.00	22.16	23,570,000	18
101	687,000	41.00	35.50	32.06	28,167,000	97	1,020,000	24.50	21.50	22.47	24,990,000	19
[illegible]	1,232,000	42.80	37.00	34.52	52,730,000	96	1,974,000	26.40	23.00	24.15	52,114,000	20
[illegible]	936,000	39.50	35.25	33.13	36,972,000	97	963,000	18.50	16.00	[illegible]	17,816,000	21
[illegible]	1,506,000	36.60	34.00	30.98	55,120,000	97	1,081,000	16.40	15.00	15.79	17,728,000	22
[illegible]	1,125,000	33.00	30.25	28.28	37,125,000	98	1,228,000	14.30	12.50	13.74	17,560,000	23
[illegible]	1,570,000	36.00	34.00	30.97	56,520,000	[illegible]	3,611,000	22.20	22.50	23.43	80,164,000	24
[illegible]	925,000	34.80	31.00	27.37	32,190,000	97	2,165,000	22.60	21.00	20.68	48,929,000	25
[illegible]	247,000	33.90	30.50	29.44	8,373,000	96	616,000	20.50	17.50	19.65	12,628,000	26
102	656,000	33.00	30.00	28.17	21,648,000	[illegible]	1,341,000	21.50	18.50	20.29	28,832,000	27
[illegible]	879,000	35.00	31.00	29.51	30,765,000	95	3,040,000	21.90	20.00	20.81	66,576,000	28
[illegible]	737,000	36.90	33.00	28.43	27,195,000	93	3,260,000	23.70	21.50	21.64	77,262,000	29
98	394,000	32.70	30.75	26.72	12,884,000	95	665,000	19.90	18.50	18.39	13,234,000	30
96	321,000	27.50	24.00	22.82	8,828,000	[illegible]	565,000	13.80	12.00	12.53	7,797,000	31
[illegible]	289,000	23.00	22.00	19.87	6,647,000	97	528,000	9.00	8.00	8.33	4,752,000	32
[illegible]	330,000	23.50	20.00	21.28	7,755,000	97	577,000	8.40	8.00	9.09	4,847,000	33
102	200,000	24.30	23.50	23.70	4,860,000	[illegible]	480,000	10.30	10.00	10.62	4,944,000	34
[illegible]	1,137,000	29.50	27.00	23.58	33,542,000	[illegible]	7,131,000	15.30	13.00	13.07	109,101,000	35
105	355,000	31.50	26.25	25.60	11,182,000	[illegible]	1,637,000	19.20	16.50	17.30	31,430,000	36
[illegible]	361,000	22.00	19.25	18.65	7,942,000	[illegible]	600,000	9.00	8.00	8.77	5,400,000	37
[illegible]	80,000	46.50	44.00	37.43	3,720,000	[illegible]	842,000	27.40	22.00	22.53	23,071,000	38
[illegible]	27,000	43.70	40.00	37.48	1,180,000	110	959,000	26.40	23.00	23.54	25,318,000	39
[illegible]	161,000	41.00	35.50	34.04	6,601,000	98	1,425,000	23.00	19.50	20.60	32,775,000	40
102	29,000	38.80	36.50	33.83	1,125,000	96	901,000	17.40	16.00	16.67	15,677,000	41
104	25,000	43.00	45.00	37.07	1,075,000	98	626,000	19.30	19.00	16.87	12,082,000	42
[illegible]	88,000	34.00	31.50	31.51	2,992,000	[illegible]	327,000	18.30	17.00	18.50	5,984,000	43
105	19,000	44.00	40.25	37.89	836,000	[illegible]	404,000	20.70	19.00	20.16	8,363,000	44
106	81,000	41.40	35.50	32.90	3,353,000	98	340,000	21.40	18.50	19.26	7,276,000	45
[illegible]	205,000	41.80	40.00	35.98	8,569,000	94	358,000	19.90	18.00	19.43	7,124,000	46
[illegible]	174,000	39.60	36.00	32.53	6,890,000	94	698,000	18.50	17.00	18.16	12,913,000	47
105	452,000	38.40	36.00	36.81	17,357,000	97	1,120,000	20.10	17.50	20.81	22,512,000	48
100.4	21,801,000	$35.79	$32.36	$30.12	$780,308,000	95.7	47,279,000	$19.41	$17.49	$18.09	$917,453,000	

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ESTIMATED NUMBER, AVERAGE PRICE, AND TOTAL VALUE OF FARM

CONTINUED

Number	State, Territory or Division	Horses					
		Number January 1, 1910		Average price per head January 1			Total value January 1, 1910
		Per cent *a*	Total	1910	1909	Ten year average	
	Division:						
	North Atlantic	100.7	1,871,000	126.46	114.19	92.48	236,598,000
	South Atlantic	101.5	1,193,000	113.86	105.58	81.02	135,834,000
	N. C. E. Miss. R.	101.7	4,894,000	124.55	109.33	86.25	609,532,000
	N. C. W. Miss. R.	102.3	6,775,000	110.35	95.30	71.18	747,589,000
	S. Central	101.5	3,863,000	84.14	77.60	42.49	325,041,000
	Far Western	103.3	2,444,000	90.74	78.28	52.43	221,769,000

a Compared with January 1, 1909.

*Statistics by counties showing the number of farm animals, compiled by the Iowa Department of Agriculture, from reports received as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly, will be found in Part 3, page ----, of this year book.

ESTIMATED NUMBER, AVERAGE PRICE, AND TOTAL VALUE OF FARM

(Figures taken from February Num

Number	State, Territory or Division	Mules					
		Number January 1, 1910		Average price per head January 1			Total value January 1, 1910
		Per cent *a*	Total	1910	1909	Ten-year average	
1	Maine	-----	-----	-----	-----	-----	-----
2	New Hampshire	-----	-----	-----	-----	-----	-----
3	Vermont	-----	-----	-----	-----	-----	-----
4	Massachusetts	-----	-----	-----	-----	-----	-----
5	Rhode Island	-----	-----	-----	-----	-----	-----
6	Connecticut			-----	-----	-----	-----
7	New York	101	4,000	$132.00	$127.00	$98.95	$528,000
8	New Jersey	100	5,000	155.00	137.00	113.80	775,000
9	Pennsylvania	100	43,000	145.00	128.00	101.31	6,235,000
10	Delaware	103	6,000	125.00	129.00	102.57	750,000
11	Maryland	99	20,000	130.00	126.00	101.75	2,600,000
12	Virginia	101	54,000	130.00	116.00	94.64	7,020,000
13	West Virginia	101	12,000	120.00	107.00	81.28	1,440,000
14	North Carolina	101	181,000	137.00	127.00	101.12	24,797,000
15	South Carolina	102	144,000	158.00	140.00	111.73	22,752,000
16	Georgia	103	248,000	157.00	134.00	112.09	38,936,000
17	Florida	104	21,000	155.00	142.00	114.17	3,255,000
18	Ohio	103	22,000	125.00	111.00	86.99	2,750,000
19	Indiana	102	94,000	126.00	112.00	87.56	11,844,000
20	Illinois	102	152,000	131.00	113.00	88.71	19,912,000

ANIMALS IN THE UNITED STATES JANUARY 1, 1910, WITH COMPARISONS

CONTINUED

Milch Cows						Other Cattle						
Number January 1, 1910		Average price per head Jan 1			Total value January 1, 1910	Number January 1, 1910		Average price per head Jan 1			Total value January 1, 1910	Number
Per cent [a]	Total	1910	1909	Ten-year average		Per cent [a]	Total	1910	1909	Ten-year average		
99.0	4,038,000	39.18	35.41	33.86	158,197,000	97.1	2,509,000	18.33	17.12	18.08	45,994,000	
100.9	1,588,000	29.87	27.91	25.58	47,436,000	99.4	3,310,000	14.71	14.02	13.48	48,687,000	
102.1	5,308,000	40.23	35.80	32.80	213,521,000	96.8	6,016,000	22.64	20.03	20.93	136,218,000	
99.3	6,139,000	34.83	31.76	29.04	213,816,000	95.0	15,261,000	21.75	20.25	20.96	331,951,000	
99.5	3,387,000	27.65	24.89	23.07	93,640,000	93.6	12,183,000	14.90	12.92	13.28	181,508,000	
104.5	1,341,000	40.04	37.00	35.29	53,698,000	98.0	8,000,000	21.64	18.96	20.03	173,005,000	

ANIMALS IN THE UNITED STATES JANUARY 1, 1910, WITH COMPARISONS.

ber United States Crop Reporter.)

Sheep						Swine						
Number January 1, 1910		Average price per head Jan. 1			Total value January 1, 1910	Number January 1, 1910		Average price per head Jan. 1			Total value January 1, 1910	Number
Per cent [a]	Total	1910	1909	Ten-year average		Per cent [a]	Total	1910	1909	Ten-year average		
97	254,000	$3.70	$3.10	$3.31	$940,000	94	62,000	$11.50	$8.50	$9.22	$713,000	1
98	74,000	3.70	3.30	3.28	273,000	98	51,000	11.50	9.50	9.65	586,000	2
101	229,000	4.00	3.60	3.56	196,000	97	95,000	10.00	8.25	8.64	950,000	3
103	46,000	4.20	4.00	4.30	193,000	99	68,000	11.50	9.25	10.22	782,000	4
101	9,000	4.20	4.00	3.99	38,000	98	13,000	12.50	10.00	10.51	162,000	5
101	34,000	4.70	4.40	4.40	160,000	99	47,000	12.50	11.00	11.11	588,000	6
101	1,177,000	5.00	4.30	4.28	5,885,000	98	656,000	11.50	8.50	8.86	7,544,000	7
100	44,000	5.20	5.00	4.54	229,000	96	152,000	12.00	9.25	10.30	1,824,000	8
98	1,112,000	4.80	4.59	4.00	5,338,000	94	931,000	9.50	8.50	8.51	8,844,000	9
97	12,000	4.60	4.40	3.97	55,000	99	46,000	8.70	8.00	7.99	400,000	10
100	163,000	4.70	4.60	3.95	766,000	95	273,000	8.90	6.60	7.21	2,430,000	11
101	522,000	3.90	3.80	3.32	2,036,000	96	774,000	6.50	5.50	4.99	5,031,000	12
100	709,000	4.30	4.00	3.46	3,049,000	90	338,000	7.70	6.00	5.75	2,603,000	13
97	215,000	2.60	2.40	2.10	559,000	97	1,356,000	7.20	6.30	4.82	9,763,000	14
97	56,000	2.40	2.20	2.06	134,000	102	699,000	7.20	6.25	5.14	5,033,000	15
95	245,000	2.20	1.90	1.89	539,000	102	1,647,000	7.00	5.50	5.02	11,529,000	16
99	98,000	2.00	1.90	1.98	196,000	102	456,000	4.80	4.00	3.08	2,189,000	17
103	3,203,000	4.80	4.10	3.78	15,374,000	86	2,047,000	10.70	6.75	7.11	21,903,000	18
101	1,227,000	5.20	4.50	4.15	6,380,000	85	2,578,000	10.00	6.10	6.75	25,780,000	19
103	817,000	5.30	4.80	4.33	4,330,000	85	3,772,000	10.90	7.00	7.44	41,115,000	20

ESTIMATED NUMBER, AVERAGE PRICE, AND TOTAL VALUE OF FARM

CONTINUED.

Number	State, Territory or Division	Mules					
		Number January 1, 1909		Average price per head January 1			Total
		Per cent *a*	Total	1910	1909	Ten-year average	
21	Michigan	110	4,000	122.00	111.00	81.36	488,000
22	Wisconsin	100	5,000	115.00	103.00	79.26	575,000
23	Minnesota	102	9,000	114.00	104.00	79.60	1,026,000
24	*Iowa	102	47,000	123.00	112.00	83.10	5,781,000
25	Missouri	102	344,000	119.00	103.00	78.75	40,936,000
26	North Dakota	103	8,000	130.00	112.00	88.51	1,040,000
27	South Dakota	108	10,000	121.00	103.00	70.82	1,210,000
28	Nebraska	101	72,000	119.00	104.00	78.50	8,568,000
29	Kansas	105	154,000	116.00	105.00	76.62	17,864,000
30	Kentucky	100	207,000	118.00	106.00	82.71	24,426,000
31	Tennessee	101	290,000	123.00	111.00	85.42	35,670,000
32	Alabama	102	253,000	122.00	108.00	91.22	30,866,000
33	Mississippi	101	290,000	113.00	107.00	87.56	32,770,000
34	Louisiana	101	178,000	116.00	102.00	94.86	20,648,000
35	Texas	102	702,000	99.00	93.00	64.79	69,498,000
36	Oklahoma	103	191,000	105.00	96.00	71.03	20,055,000
37	Arkansas	99	215,000	109.00	99.00	76.32	23,435,000
38	Montana	103	5,000	102.00	83.00	56.70	510,000
39	Wyoming	175	2,000	106.00	89.00	64.99	212,000
40	Colorado	103	12,000	105.00	95.00	67.91	1,260,000
41	New Mexico	101	8,000	79.00	71.00	47.93	632,000
42	Arizona	110	6,000	108.00	93.00	58.46	648,000
43	Utah	105	3,000	80.00	75.00	45.70	240,000
44	Nevada	105	4,000	79.00	90.00	58.24	316,000
45	Idaho	108	2,000	116.00	101.00	62.76	232,000
46	Washington	108	5,000	121.00	108.00	75.57	605,000
47	Oregon	105	8,000	108.00	103.00	65.76	864,000
48	California	100	83,000	122.00	107.00	81.66	10,126,000
	United States	101.7	4,123,000	$119.84	$107.84	$ 84.98	$ 494,095,000
	Division:						
	North Atlantic	100.0	52,000	144.96	128.79	102.38	7,538,000
	South Atlantic	102.1	686,000	148.03	131.45	106.80	101,550,000
	N. C. E. Miss. R.	102.2	277,000	128.41	112.29	85.42	35,569,000
	N. C. W. Miss. R.	102.7	644,000	118.67	104.37	78.68	76,425,000
	S. Central	101.4	2,326,000	110.65	101.29	79.11	257,368,000
	Far Western	101.5	138,000	113.37	100.80	73.98	15,645,000

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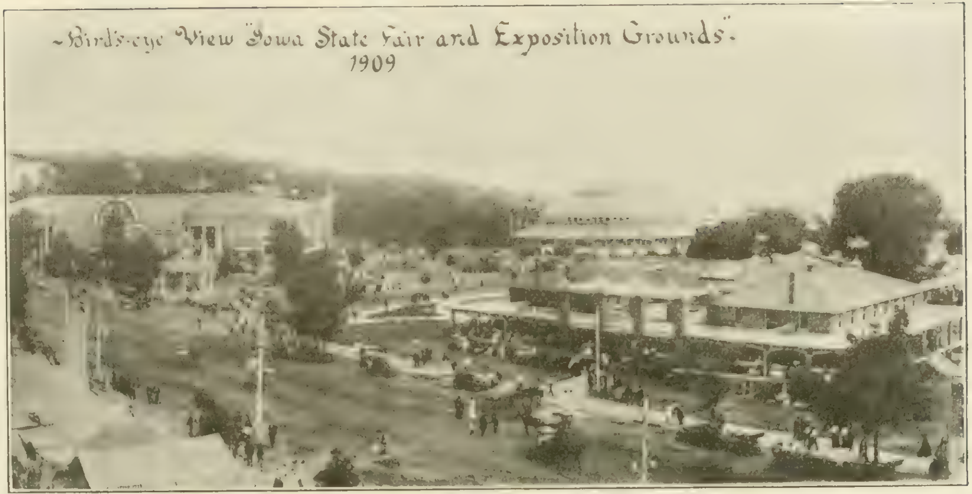
a Compared with January 1, 1909.

*Statistics by counties showing the number of farm animals, compiled by the Iowa Department of Agriculture, from reports received as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly, will be found in Part 3, page 99, of this year book.

ANIMALS IN THE UNITED STATES JANUARY 1, 1910, WITH COMPARISONS

CONTINUED.

Sheep						Swine						
Number January 1, 1910		Average price per head Jan. 1			Total value January 1, 1910	Number January 1, 1910		Average price per head Jan.			Total value January 1, 1910	Number
Per cent *a*	Total	1910	1909	Ten-year average		Per cent *a*	Total	1910	1909	Ten-year average		
101	2,151,000	4.70	3.90	3.78	10,110,000	87	1,159,000	10.50	7.00	7.42	12,170,000	21
99	1,034,000	4.50	3.80	3.54	4,653,000	90	1,651,000	11.80	8.25	7.96	19,482,000	22
103	482,000	4.00	3.50	3.30	1,928,000	87	1,003,000	11.50	7.75	7.81	11,534,000	23
101	754,000	5.30	4.60	4.19	3,996,000	82	6,485,000	11.30	8.00	7.78	73,280,000	24
96	957,000	4.40	3.90	3.49	4,211,000	83	2,714,000	7.90	5.25	5.47	21,441,000	25
100	621,000	4.00	3.60	3.21	2,484,000	91	206,000	11.00	8.00	7.94	2,266,000	26
101	829,000	4.00	3.50	3.27	3,316,000	90	805,000	11.10	7.90	7.72	8,936,000	27
96	393,000	4.40	3.50	3.34	1,729,000	82	3,201,000	11.00	7.25	7.20	35,211,000	28
112	278,000	4.70	4.00	3.45	1,307,000	81	1,942,000	10.00	6.50	6.86	19,420,000	29
99	1,060,000	4.00	3.80	3.25	4,240,000	80	989,000	6.80	4.75	4.78	6,725,000	30
99	347,000	3.40	3.20	2.59	1,180,000	85	1,264,000	6.50	5.00	4.66	8,216,000	31
97	178,000	2.00	1.90	1.76	356,000	95	1,176,000	6.00	5.20	4.19	7,056,000	32
97	171,000	1.90	1.90	1.71	325,000	100	1,290,000	5.50	4.60	4.19	7,095,000	33
98	178,000	1.90	1.80	1.80	338,000	108	744,000	5.50	4.75	4.30	4,092,000	34
103	1,909,000	2.90	2.70	2.23	5,536,000	97	3,205,000	6.60	5.60	4.72	21,153,000	35
106	108,000	3.30	3.20	2.82	356,000	82	1,302,000	7.70	5.15	5.63	10,025,000	36
92	233,000	2.30	2.10	1.84	536,000	85	978,000	4.80	4.00	3.50	4,694,000	37
102	5,747,000	4.20	3.30	3.03	24,137,000	110	75,000	10.10	10.00	8.78	758,000	38
111	7,316,000	4.40	3.40	3.14	32,190,000	109	21,000	8.50	7.00	8.07	178,000	39
102	1,729,000	3.80	3.10	2.92	6,570,000	150	248,000	9.50	7.00	7.26	2,356,000	40
95	4,729,000	2.90	3.00	2.40	13,714,000	100	32,000	8.50	6.75	6.08	272,000	41
97	1,020,000	3.70	3.30	2.76	3,774,000	98	22,000	9.50	7.25	6.76	209,000	42
102	3,177,000	4.10	3.30	2.94	13,026,000	98	61,000	9.00	7.65	7.60	549,000	43
102	1,585,000	3.70	3.00	3.07	5,864,000	101	15,000	9.00	9.50	7.65	135,000	44
109	4,248,000	4.70	3.40	2.94	19,966,000	100	143,000	8.70	7.25	6.96	1,244,000	45
98	783,000	3.90	3.40	3.13	3,054,000	93	183,000	9.40	7.50	7.62	1,720,000	46
98	2,581,000	3.70	3.10	2.82	9,550,000	92	267,000	8.20	6.25	5.94	2,189,000	47
102	2,372,000	3.30	2.80	2.97	7,828,000	96	540,000	8.20	6.50	6.62	4,428,000	48
102.0	57,216,000	$4.08	$3.43	$3.13	$233,664,000	88.2	47,782,000	$9.14	$6.55	$6.46	$436,603,000	
99.4	2,979,000	4.69	4.20	3.99	13,972,000	96.0	2,075,000	10.60	8.65	8.93	21,993,000	
99.1	2,020,000	3.63	3.41	2.95	7,334,000	98.8	5,589,000	6.97	5.78	5.04	38,978,000	
101.7	8,432,000	4.84	4.14	3.86	40,847,000	86.1	11,207,000	10.75	6.92	7.28	120,450,000	
100.1	4,314,000	4.40	3.83	3.48	18,971,000	82.8	16,356,000	10.5	7.20	7.15	172,088,000	
100.3	4,184,000	3.08	2.89	2.36	12,867,000	91.4	10,948,000	6.3	5.03	4.56	69,056,000	
103.0	35,287,000	3.96	3.22	2.91	139,673,000	102.0	1,607,000	8.7	6.95	6.86	14,038,000	


Bird's-eye View "Iowa State Fair and Exposition Grounds".
1909

Agricultural Building   Stock Pavilion   Administration Building

PART III.

Crop and Other Farm Statistics for the Year Ending December 31, 1909.

The Thirty-third General Assembly for the State of Iowa is to be congratulated upon the repeal and re-enactment of that section of the Code relative to the gathering of farm statistics. The State of Iowa has been far behind her sister states in placing upon her statutes a suitable law providing for the gathering and disseminating yearly of crop and other farm statistics.

While the law enacted by the Thirty-third General Assembly is hardly broad enough in its provisions it is far in advance of the old statutes. and is. to say the least. a step in the right direction. In the past Iowa has been forced to make up her yearly statement of her farm resources from voluntary reports. which at best could not be considered authentic. Neither has there in the past been any method whereby reliable live stock data could be secured except as taken by the United States or State Census—every five years —or from the estimates made each year by the United States Statistical Department.

The new law enacted by the last General Assembly follows:

CHAPTER 86, ACTS 33rd GENERAL ASSEMBLY.

SECTION 1. Repeal—Crop Statistics. That section thirteen hundred sixty-three (1363) of the code is hereby repealed and the following enacted in lieu thereof.

"Each year the county auditor shall deliver to each assessor the necessary blanks for recording. as to each person whose property is listed, statistics of the previous year as to the number of acres, average and total yield of corn, oats, wheat. and such other crops and information as may be in their possession which may be called for relative to agriculture, agricultural production, agricultural labor, live stock, poultry and egg production, for publication in the Iowa Year Book of Agriculture. The assessor shall require each person whose property is listed to make answers to such inquiries as may be necessary to enable him to return the foregoing statistics; and said blanks with such entries shall be returned to the county auditor on or before the fifteenth day of April, who shall tabulate the same by townships, and forward the returns thereof to the Secretary of the State Board of Agriculture not later than the tenth day of May. The Secretary of the State Board of Agriculture shall provide and cause to be delivered to the county auditor before the first week in January the blanks to be used by the assessors and county auditor for the proper return of the information required in this section."

Approved March 25, A. D., 1909.

It will be noticed no provision was made for the publication and distribution of the statistics gathered under the provisions of this act, other than in the annual Iowa Year Book of Agriculture, thereby, curtailing their usefulness to a great extent on account of their being only a limited number of the Year Books printed. This in my judgment is a grievous error which should be rectified by the next General Assembly. The printing distributon of at least ten to twenty-five thousand bulletins should be authorized immediately following the compilations of the statistics.

Some trouble was experienced by the department over delays by County Auditors in not properly making out their reports and sending them in. Occasionally an assessor was found who did not thoroughly understand that it was as much a part of his duties to gather the information to enable him to properly fill out his blanks as it was to list and make his assessments. A more strict compliance with the law in this repect should be demanded; if the law is not explicit it should be amended so as to leave no room for the assessors not interpretating it clearly or correctly.

Again, more care should be exercised upon the part of the assessor in filling out his blanks to avoid many seemingly rediculous statements. On the whole, however, the reports were received on time and in first class condition. A few auditors complained because no provision had been made for additional compensation or clerical help for compiling the reports. In this respect they were in the same predicament as the Department as no provision by the legislature was made for the extra clerk hire necessary to promptly and quickly compile the reports received from the various counties. For this reason much delay has been occasioned in compiling the reports and getting them ready for publication in the Year Book.

For convenience in printing the statistes gathered under the provisions of this law are presented in four tables.

Table No. 1—Contains the total number, average size, and total acreage of all farms within the State: number rods of tiling, number of silos, number of manure spreaders in use, and the average monthly wage paid farm help.

Table No. II—Contains the total acreage, total yield and average yield per acre of the following farm crops for the year 1909: —corn, oats, barley, winter and spring wheat. It will be noticed by a comparison of the table with the tables compiled by the Iowa Weather and Crop Service on page 37 that there is a variation in the acreage and yields. The tables by this department are gathered from every farm within the state, while those of the Iowa Weather and Crop Service are compiled from estimates received from only seven or eight hundred crop reporters. The acreage and yield given in this table will necessarily have to be considered authentic and final.

Table No. III—Contains the acreage yield and average yield per acre of rye, potatoes, alfalfa and hay, also the number of bushels of timothy and clover seed, number of acres of pop corn, acres and yild of sweet corn, number of acres in garden and orchards, and the acreage alloted to pasture, all for the year 1909.

Table No. IV Shows the number of horses (all ages), mules (all ages), and cattle (all ages), on the farms of Iowa January 1, 1909; also the number of cattle shipped in for feeding during the year and the number sold for slaughter during the same period. Also shows the average number of hogs and sheep kept on the farm; the number of sheep shipped in for feeding and the number sold for slaughter; also the average number of poultry kept on the farm, the number marketed during the year, the approximate number of dozens of eggs received and the approximate number of dozens sold during the year.

TABLE NO. 1.

Total number; average size, and total acreage of farms. Number rods of tiling; number of silos; number of manure spreaders in use and average monthly wage paid farm help, by counties, for the year 1909.

Counties	Number of farms	Average size of farm	Total acreage of farms	Number rods tiling	Number silos	Number manure spreaders	Average monthly wage paid farm help
Adair	2,137	155	331,192	300,205	----------	422	$ 27.50
Adams	1,503	160	240,561	160,966	4	252	28.38
Allamakee	2,081	117	344,144	1,217	19	398	27.50
Appanoose	1,679	139	233,283	13,401	7	57	28.25
Audubon	1,638	162	265,171	108,089	27	351	27.75
Benton	2,323	170	395,766	866,522	32	1,287	29.82
Black Hawk	1,952	163	317,586	306,289	101	1,116	27.26
Boone	2,334	130	302,708	631,422	13	563	27.50
Bremer	1,844	133	245,072	59,835	33	1,031	27.54
Buchanan	2,174	146	316,762	122,942	8	840	24.50
Buena Vista	1,753	176	309,078	557,881	18	913	28.60
Butler	1,950	168	327,691	33,272	23	917	27.05
Calhoun	1,826	172	314,564	813,812	3	536	27.00
Cass	2,032	159	323,424	140,260	1	695	27.61
Cedar	2,086	155	323,197	585,752	6	963	25.10
Carroll	1,872	167	312,267	194,182	1	616	25.83
Cerro Gordo	1,672	185	310,892	267,126	12	686	25.62
Cherokee	1,626	202	328,422	75,897	1	1,030	29.64
Chickasaw	1,751	157	275,390	14,480	9	663	25.92
Clarke	1,436	155	222,404	9,318	5	180	23.50
Clay	1,534	199	306,216	505,815	7	794	28.00
Clayton	2,738	149	417,405	2,094	51	657	25.38
Clinton	2,444	157	382,571	258,680	9	1,069	26.50
Crawford	2,338	182	424,965	479	1	714	27.05
Dallas	2,129	152	323,210	1,022,475	11	723	25.13
Davis	2,206	150	313,107	4,064	26	116	23.05
Decatur	1,792	147	263,252	4,285	9	114	24.73
Delaware	1,954	156	305,498	119,374	78	784	25.92

Des Moines	1,830	121	221,090	649,489	18	218	27.27
Dickinson	917	201	184,593	183,005	1	242	28.00
Dubuque	2,034	163	332,066	11,824	4	528	25.23
Emmet	866	224	193,739	340,295	11	319	26.61
Fayette	2,855	141	401,946	35,685	98	1,047	25.66
Floyd	1,954	142	276,768	113,334	3	826	28.06
Franklin	1,762	187	329,982	312,536	11	857	27.62
Fremont	1,390	187	259,492	43,830	----------	170	27.50
Greene	1,934	169	327,754	777,951	3	715	26.66
Grundy	1,617	185	299,448	307,758	10	980	27.25
Guthrie	1,792	154	276,526	198,182	3	452	24.90
Hamilton	2,069	164	340,368	1,106,634	18	830	25.08
Hancock	1,424	207	294,357	541,844	40	476	24.00
Hardin	1,933	165	319,538	520,329	17	921	26.10
Harrison	2,420	155	375,019	11,356	6	389	26.50
Henry	1,774	135	240,096	823,187	15	237	27.00
Howard	1,409	171	241,527	13,302	23	439	26.00
Humboldt	1,283	188	241,325	416,502	7	485	27.48
Ida	1,313	192	251,767	15,234	2	690	29.04
Iowa	2,137	152	325,142	788,937	62	722	27.50
Jackson	2,290	151	344,154	26,661	9	415	27.00
Jasper	2,840	146	415,173	456,381	11	683	25.85
Jefferson	1,903	130	246,374	328,551	5	245	23.30
Johnson	1,931	135	260,529	397,329	21	522	26.20
Jones	1,894	164	310,723	461,490	18	902	27.00
Keokuk	2,326	140	326,234	1,017,944	2	355	25.47
Kossuth	2,367	212	502,646	891,258	23	1,033	26.00
Lee	2,030	131	265,269	98,371	18	254	24.42
Linn	2,731	128	351,023	554,286	47	1,112	25.18
Louisa	1,514	155	235,383	404,331	----------	325	27.91
Lucas	1,604	150	240,221	6,228	41	139	22.89
Lyon	1,410	216	304,286	89,910	5	839	26.75
Madison	2,071	146	303,054	244,063	1	272	25.38
Mahaska	2,488	118	293,673	739,239	5	234	27.50
Marion	2,276	136	309,072	296,031	1	241	24.78
Marshall	2,137	151	323,367	956,708	14	1,132	28.60
Mills	1,380	158	218,020	7,493	----------	127	30.50
Mitchell	1,482	178	264,129	65,339	17	770	27.03
Monona	2,118	163	344,455	63,065	5	309	27.00
Monroe	1,414	145	205,394	8,988	24	32	25.08
Montgomery	1,724	135	233,198	119,419	----------	392	28.60
Muscatine	1,553	146	227,396	177,515	9	869	25.33
O'Brien	1,604	193	310,432	310,310	1	952	26.31
Osceola	910	231	210,727	155,695	----------	471	26.00
Page	2,110	146	307,175	188,281	5	363	27.00
Palo Alto	1,903	164	312,040	381,606	9	646	26.67
Plymouth	2,221	191	425,224	5,511	5	1,304	27.05

TABLE No. 1—CONTINUED

Counties	Number of farms	Average size of farm	Total acreage of farms	Number rods tiling	Number silos	Number manure spreaders	Average monthly wage paid farm help
Pocahontas	1,766	176	310,543	910,693	9	629	27.47
Polk	2,429	119	289,689	569,864	63	546	32.50
Pottawattamie	2,969	159	470,715	54,364	----------	781	27.10
Poweshiek	1,987	162	321,901	922,103	23	790	26.72
Ringgold	1,684	154	259,523	5,840	----------	225	24.20
Sac	1,857	181	335,535	227,167	8	923	26.35
Scott	2,032	129	262,300	361,480	46	784	28.54
Shelby	2,029	167	338,840	40,412	7	600	28.51
Sioux	2,331	148	444,001	78,813	16	1,535	24.48
Story	2,136	152	325,135	979,958	47	958	27.13
Tama	2,296	172	415,744	410,743	27	1,080	29.00
Taylor	1,852	152	281,319	55,060	12	233	25.34
Union	1,465	166	242,758	119,002	4	197	24.34
Van Buren	1,912	141	270,388	67,336	19	165	23.95
Wapello	1,735	116	201,898	326,095	12	124	24.32
Warren	2,150	135	289,531	315,151	4	257	26.00
Washington	2,110	147	310,874	1,398,890	11	469	27.12
Wayne	1,829	160	293,409	4,859	1	295	21.00
Webster	2,380	163	387,114	929,088	15	714	26.52
Winnebago	1,255	172	215,672	240,899	17	383	24.75
Winneshiek	2,709	145	393,133	4,022	29	797	25.20
Woodbury	2,224	183	407,342	16,987	6	666	28.00
Worth	1,283	175	224,638	7,193	4	435	25.65
Wright	1,799	184	331,339	795,054	13	691	26.95
Total	190,488	158.66	30,221,356	39,744,166	1,556	59,248	26.52

TABLE NO. 2.

Acreage; yield per acre and total yield of: corn, oats, barley, winter wheat, and spring wheat, by counties for the year 1909.

Counties	Corn			Oats			Barley			Winter Wheat			Spring Wheat		
	Acres	Bushel per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels
Adair	100,857	31	3,160,530	27,616	21	593,972	5,818	14	78,865	97	14	1,386	3,422	11	36,215
Adams	61,764	27	1,755,839	21,185	20	426,349	2,160	13	27,750	2,528	14	35,394	1,292	10	12,750
Allamakee	47,352	30	1,431,585	33,970	31	1,049,695	17,067	21	359,771	249	20	4,988	899	18	16,163
Appanoose	47,060	24	1,129,704	12,685	24	303,230	37	17	615	2,712	13	33,651	370	9	3,189
Audubon	88,596	42	3,760,176	31,757	23	735,025	9,540	18	175,600	121	18	2,146	5,469	11	61,821
Benton	124,355	43	5,325,131	70,532	33	2,305,779	15,852	18	278,327	90	21	1,915	956	16	15,196
Black Hawk	87,818	36	3,204,994	52,442	30	1,565,515	5,788	21	119,145	53	24	1,262	130	16	2,079
Boone	107,373	32	3,436,291	53,843	23	1,494,862	1,365	13	17,745	131	17	2,284	1,621	10	17,238
Bremer	60,056	36	2,151,276	52,235	28	1,461,425	4,600	21	94,998	185	21	3,852	116	17	1,959
Buchanan	84,760	31	2,662,049	49,008	27	1,416,201	4,316	21	90,468	112	17	1,921	266	15	3,856
Buena Vista	96,882	35	3,394,323	73,600	25	1,868,610	1,907	21	40,168	58	11	638	429	15	6,375
Butler	96,295	33	3,179,221	70,021	26	1,832,680	2,861	17	47,502	61	12	749	226	16	3,650
Calhoun	106,481	30	3,061,005	79,889	24	1,932,368	2,030	15	30,290	112	13	1,422	228	12	2,673
Carroll	102,211	37	3,769,820	54,944	22	1,291,753	7,208	15	106,098	178	16	2,853	6,253	12	74,488
Cass	106,101	40	4,202,640	33,238	24	812,367	5,609	17	95,349	3,143	18	55,851	10,608	12	128,681
Cedar	100,942	42	4,293,079	31,047	30	921,518	17,254	18	305,276	1,559	23	35,819	1,302	17	22,529
Cerro Gordo	89,998	39	3,509,412	70,828	22	1,561,875	3,410	19	65,853	223	14	3,071	375	19	7,331
Cherokee	104,746	40	4,170,902	68,598	31	2,108,955	7,871	16	125,645	47	13	582	964	12	11,282
Chickasaw	62,790	29	1,871,315	57,821	22	1,252,863	6,206	18	113,564	42	20	867	892	16	13,930
Clarke	50,285	19	948,502	15,164	19	293,395	985	7	6,526	2,493	9	21,434	80	6	506
Clay	77,530	32	2,457,323	70,357	23	1,602,126	1,917	17	30,151	86	8	683	455	14	6,445
Clayton	108,235	24	2,537,108	51,860	31	1,599,312	16,272	21	335,492	660	20	13,586	1,070	21	22,653
Clinton	114,175	44	5,059,709	38,810	32	1,230,024	9,687	22	212,066	1,122	21	24,241	1,453	19	27,220
Crawford	140,603	40	5,689,216	54,005	26	1,391,864	10,611	19	199,671	509	16	8,260	17,397	12	201,035
Dallas	113,295	36	4,121,265	47,767	29	1,395,534	1,478	17	25,990	1,539	16	25,333	1,693	13	21,474
Davis	54,288	27	1,477,682	15,829	27	422,721	35	23	810	3,317	16	50,099	41	9	376
Decatur	60,911	17	1,014,959	18,007	20	361,287	27	11	298	3,144	10	32,046	83	11	966

TABLE No. 2 CONTINUED

Counties	Corn			Oats			Barley			Winter Wheat			Spring Wheat		
	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels
Delaware	80,058	38	3,073,708	37,026	32	1,186,122	11,268	21	203,404	46	17	786	212	19	4,058
Des Moines	61,513	37	2,277,011	23,370	29	691,487	911	24	21,657	8,109	21	167,513	281	14	3,941
Dickinson	41,820	34	1,471,451	30,896	27	832,377	3,294	16	53,966	82	13	1,125	829	16	13,053
Dubuque	64,417	41	2,820,104	46,253	31	1,458,741	6,687	23	156,667	209	19	4,054	746	18	13,265
Emmet	42,919	33	1,417,132	35,334	23	819,026	2,475	15	37,951	7	8	56	434	17	7,452
Fayette	83,403	34	2,834,713	57,239	27	1,572,727	13,809	19	261,331	192	21	3,972	764	17	12,750
Floyd	73,857	36	2,645,837	65,670	23	1,550,197	2,621	17	45,118	59	15	862	423	18	7,537
Franklin	95,532	37	3,518,756	78,778	26	2,058,801	4,448	20	88,967	144	16	2,357	662	17	11,123
Fremont	125,138	33	4,160,837	12,236	23	283,016	238	17	4,051	5,916	21	121,605	3,582	11	40,853
Greene	114,720	32	3,623,532	54,742	27	1,480,566	2,292	11	36,208	117	14	1,575	410	12	4,864
Grundy	94,929	40	3,885,587	65,115	32	2,113,771	7,740	20	154,820	108	20	2,200	228	18	4,102
Guthrie	78,557	33	2,620,219	34,233	23	773,840	2,866	13	37,263	210	17	3,611	2,652	13	33,353
Hamilton	106,323	39	4,133,112	69,133	30	2,074,146	703	18	12,654	748	18	13,499	1,167	14	16,608
Hancock	72,857	34	2,472,188	65,389	21	1,378,719	4,512	15	69,595	36	16	579	1,261	15	19,418
Hardin	96,955	37	3,567,997	61,142	29	1,769,795	2,376	18	42,342	487	17	8,523	1,337	15	20,227
Harrison	131,873	36	4,752,583	21,304	23	490,878	3,131	20	63,948	7,740	17	127,528	18,158	11	201,268
Henry	70,809	40	2,830,658	29,259	28	823,815	241	23	5,538	3,342	20	68,200	254	14	3,549
Howard	44,668	28	1,278,902	46,826	24	1,125,874	9,373	21	199,147	53	25	1,332	562	16	9,254
Humboldt	70,271	34	2,395,640	53,766	27	1,441,437	563	22	12,386	31	21	639	1,730	16	27,313
Ida	87,044	39	3,465,954	40,813	28	1,168,107	14,314	16	227,073	237	16	3,878	2,294	11	25,290
Iowa	89,331	43	3,876,111	37,911	29	1,097,779	2,092	17	35,497	363	23	8,556	2,661	14	36,689
Jackson	62,062	42	2,652,484	25,521	31	785,730	6,849	19	132,987	442	17	7,553	1,143	17	19,079
Jasper	128,823	40	5,138,708	48,001	27	1,314,430	2,558	16	40,948	1,434	19	28,297	8,076	13	103,151
Jefferson	59,827	30	1,821,951	24,082	27	667,190	898	19	17,054	4,713	21	102,879	877	11	9,936
Johnson	74,024	43	3,208,976	34,698	30	1,065,602	4,172	26	109,522	1,165	23	27,465	1,534	17	25,347
Jones	76,462	44	3,411,018	25,995	34	871,455	10,158	21	213,337	99	18	1,784	327	18	5,915
Keokuk	95,755	31	2,981,669	34,020	28	944,765	2,853	19	55,994	1,917	19	37,663	3,942	12	48,969
Kossuth	120,829	32	3,824,436	127,896	20	2,520,674	3,092	20	61,417	49	16	716	2,418	16	38,775
Lee	55,063	33	1,805,845	17,451	31	538,649	176	19	3,360	15,976	16	253,524	5	20	100
Linn	100,421	43	4,315,576	50,682	35	1,803,397	4,416	23	102,178	144	19	2,864	1,577	18	29,243
Louisa	65,895	36	2,385,992	19,798	42	834,371	576	21	12,230	10,104	24	239,767	1,687	13	21,965
Lucas	50,055	28	1,409,572	15,101	25	349,216	35	21	728	3,302	14	46,224	549	9	4,814

Lyon	95,963	41	3,949,749	68,008	32	2,254,665	26,989	26	453,779	84	24	2,013	1,167	15	17,886
Madison	79,410	31	2,448,823	18,428	23	431,461	5,920	15	88,178	1,035	13	13,900	1,748	11	19,034
Mahaska	96,925	30	2,911,483	31,597	26	817,681	2,670	18	48,663	1,847	20	36,315	3,990	12	45,761
Marion	81,497	36	2,930,763	23,541	23	547,558	3,869	16	60,707	2,351	14	33,856	6,624	11	73,816
Marshall	108,310	45	4,902,721	59,046	29	1,722,876	1,814	19	35,664	1,421	23	33,065	2,250	15	34,825
Mills	90,453	36	3,249,668	12,695	25	317,987	990	20	19,448	3,180	20	64,968	6,566	11	70,809
Mitchell	72,593	28	2,017,868	74,623	31	2,295,667	8,141	21	169,263	45	24	1,093	681	21	13,991
Monona	123,053	32	4,009,411	23,283	22	533,920	4,557	17	79,602	16,465	19	319,070	11,445	12	141,331
Monroe	34,647	25	865,925	6,963	23	161,301	183	16	3,010	2,848	17	49,410	2,044	11	22,905
Montgomery	88,477	39	3,479,334	15,758	26	410,597	1,286	20	26,343	9,154	12	109,582	12,719	11	140,973
Muscatine	64,163	38	2,472,277	15,575	27	419,635	9,228	17	158,760	4,088	21	86,520	1,554	13	20,749
O'Brien	93,840	37	3,539,251	64,100	30	1,939,613	16,771	16	266,450	116	11	1,229	436	15	6,461
Osceola	53,425	33	1,769,166	51,363	27	1,375,278	8,122	19	159,136	28	11	324	165	17	2,814
Page	111,652	38	4,242,127	17,543	41	732,384	1,811	19	35,146	9,414	19	183,447	7,252	10	75,241
Palo Alto	68,429	33	2,247,391	53,845	25	1,374,432	1,161	15	17,027	66	15	1,004	361	15	5,404
Plymouth	160,770	28	4,579,895	66,624	37	2,444,129	14,825	13	185,086	1,540	16	24,192	22,329	12	278,871
Pocahontas	96,606	33	3,163,345	82,995	24	2,038,261	641	17	10,300	46	15	706	366	13	4,671
Polk	102,849	33	3,382,008	35,127	27	942,859	1,582	15	23,195	2,827	23	65,876	6,521	18	115,377
Pottawattamie	183,355	39	7,285,804	38,830	23	903,323	6,579	21	155,834	3,732	18	67,148	24,841	8	207,021
Poweshiek	97,154	41	3,959,723	40,202	27	1,077,231	5,993	16	99,370	339	23	7,732	2,699	14	37,459
Ringgold	58,852	20	1,166,101	23,338	19	436,750	80	8	680	3,157	19	59,979	137	8	1,096
Sac	109,110	38	4,162,173	63,498	27	1,710,050	3,082	38	151,176	250	17	4,388	698	13	9,024
Scott	74,283	46	3,430,366	20,644	29	618,363	25,069	19	486,111	4,484	25	115,646	2,415	17	41,574
Shelby	123,875	45	5,578,946	37,241	44	1,659,950	14,676	18	261,845	585	16	9,189	11,146	11	128,468
Sioux	155,471	43	6,673,718	84,081	29	2,439,485	30,564	17	511,202	591	14	8,574	12,730	13	166,506
Story	116,826	27	4,163,601	56,425	30	1,653,629	1,509	17	24,930	1,268	20	24,357	1,082	15	15,835
Tama	123,010	40	4,911,514	65,495	28	1,812,537	11,139	19	212,752	195	22	4,323	3,851	15	58,825
Taylor	72,304	26	1,875,887	20,862	24	493,345	1,190	18	21,279	5,503	15	81,146	387	9	3,564
Union	54,766	20	1,004,370	18,416	20	365,111	1,255	12	15,198	740	10	7,678	554	8	4,472
Van Buren	54,405	29	1,609,385	18,638	25	473,405	150	17	2,567	6,442	19	123,301	84	9	805
Wapello	48,876	24	1,158,267	15,075	25	385,169	608	16	9,611	3,858	21	79,259	424	9	4,062
Warren	72,334	32	2,294,453	17,555	24	413,537	1,239	13	16,388	3,507	17	60,473	3,482	13	42,463
Washington	95,115	36	3,417,247	41,362	28	1,171,047	1,466	19	28,068	2,339	22	51,987	1,782	15	27,541
Wayne	71,836	22	1,551,166	26,478	23	605,366	290	7	4,954	1,718	10	17,613	59	7	415
Webster	112,002	33	3,750,674	85,887	26	2,249,865	779	14	11,099	180	16	2,834	3,056	13	38,705
Winnebago	46,291	38	1,780,644	32,406	24	777,289	6,216	18	110,058	12	7	84	6,883	17	115,868
Winneshiek	71,664	37	2,669,061	60,689	28	1,715,458	20,880	22	459,264	133	17	2,285	4,132	17	71,118
Woodbury	150,507	38	5,785,003	53,841	26	1,380,655	12,772	15	196,450	11,115	19	207,607	9,038	12	104,591
Worth	45,821	33	1,536,190	50,593	21	1,098,329	5,227	18	92,251	39	15	575	3,962	17	69,891
Wright	96,662	34	3,255,345	72,743	24	1,764,295	2,903	16	49,840	81	18	1,422	1,257	19	23,897
Total	8,681,850	34.6	308,036,868	4,312,134	27	117,083,850	562,622	17.5	10,352,040	198,970	18.2	3,621,953	303,792	12.5	3,800,460

TABLE NO. 3.

Acreage; yield per acre and total yield of: rye, potatoes, alfalfa, and hay. Also number of bushels of flax seed, timothy seed, and clover seed; acreage of pop corn, sweet corn, garden, orchard, and pastures, by counties, for the year 1909.

Counties	Rye			Flax seed—acres	Potatoes			Timothy seed—bushels	Clover seed—bushels	Pop corn—acres	Sweet corn—acres	Garden—acres	Orchard—acres	Hay			Alfalfa		Pastures—acres
	Acres	Bushels per acre	Total bushels		Acres	Bushels per acre	Total bushels							Acres	Tons per acre	Total tons	Acres	Total tons	
Adair	34	10	350	------	1,017	85	85,317	24,601	374	48	1	576	2,361	51,424	1.4	75,793	27	34	115,504
Adams	93	9	832	------	563	76	42,655	6,632	77		---	221	2,392	31,389	1.4	44,203	73	204	91,732
Allamakee	405	16	6,633	45	1,616	94	151,369	24,570	378	2	62	463	781	49,261	1.6	79,435	31	82	139,987
Appanoose	311	11	3,477	------	105	64	25,872	6,991	17	5	12	241	1,682	48,163	1.0	48,915	--	------	90,957
Audubon	34	17	577	------	911	104	94,837	8,528				221	1,249	34,189	1.6	54,955	41	98	81,572
Benton	1,011	16	15,903	------	1,594	98	155,845	15,313	692	11	2,541	582	1,523	56,962	1.7	96,716	21	36	117,253
Black Hawk	2,364	11	26,466	71	2,286	79	179,655	3,427	116	113	1,577	933	2,832	49,001	2.6	128,090	1	4	100,237
Boone	288	15	4,385	62	1,170	74	87,090	853	102	5	1	410	2,680	51,617	1.1	55,778	50	104	81,617
Buchanan	926	12	10,969	15	1,147	88	100,828	13,469	178	1	665	463	631	57,048	1.3	72,277	1	3	102,905
Bremer	604	15	9,118	9	1,361	94	128,486	1,892	17	121	952	468	513	46,943	1.4	64,756	-----	------	68,013
Buena Vista	8	10	80	88	1,486	96	143,311	628	31	116	138	267	958	43,705	1.5	66,411	72	157	73,798
Butler	1,948	12	24,129	49	1,909	85	162,351	5,173	314	28	34	183	1,026	44,177	1.4	63,479	------	------	80,867
Calhoun	29	13	373	104	1,063	85	90,003	412	11	7	331	354	1,427	36,192	1.3	48,021	24	61	68,529
Carroll	59	8	463	17	2,124	108	228,266	2,365	16		6	275	1,318	39,729	1.6	62,547	35	90	72,713
Cass	183	12	2,254	60	1,330	84	112,199	8,233	67	181	163	701	2,338	42,226	1.6	68,654	68	184	101,916
Cedar	649	11	6,978	----	1,333	89	118,635	21,378	275	2	260	409	1,384	48,241	1.7	80,351	7	19	98,397
Cerro Gordo	158	12	1,939	236	1,377	91	125,618	3,551	22	14	20	292	855	59,624	1.3	80,463	7	24	78,231
Cherokee	9	20	185	22	1,707	102	174,360	1,059	34	--		251	847	41,406	1.5	63,585	91	193	83,775
Chickasaw	310	11	3,372	885	1,245	89	111,818	37,523	12	4	----	157	600	43,717	1.5	67,542	------	------	76,616
Clarke	42	9	396	--	290	61	17,686	24,486	127	1		438	1,190	41,200	.89	36,840	6	4	95,763
Clay	108	10	1,078	160	831	102	84,784	13,395	37	103	5	224	546	51,928	1.4	71,613	17	21	86,412
Clayton	1,011	17	17,634	4	1,732	96	165,591	10,884	207	3	200	793	1,743	61,294	1.7	103,481	14	48	153,104
Clinton	1,210	16	19,203	-----	1,223	106	129,474	4,711	41	1	7	391	954	62,441	1.6	101,427	5	7	151,095
Crawford	138	11	1,577	-----	2,239	106	241,056	2,527	12	106	2	283	1,457	55,082	1.5	85,790	234	698	123,861
Dallas	279	13	3,740	------	767	89	68,016	1,618	654	10	40	575	2,702	32,372	1.6	50,809	157	274	96,071
Davis	748	9	7,071	------	724	104	75,554	31,844	18	----	6	808	1,852	44,819	1.1	50,513	16	33	191,057
Decatur	263	7	1,735	------	294	32	9,351	12,967	121	81	----	320	1,825	40,194	1.1	44,358	------	------	116,312

Delaware	1,210	12	14,522	------	1,115	95	105,792	6,680	246	8	177	502	649	52,096	1.5	81,674	6	9	106,908
Des Moines	708	16	11,716	------	1,163	101	117,158	5,818	1,473	22	36	785	2,318	26,234	1.3	35,868	12	35	87,802
Dickinson	159	28	4,520	716	552	116	64,392	7,103	5	41	14	231	523	34,292	1.4	47,746	10	38	48,667
Dubuque	228	15	3,313	------	2,070	103	213,145	5,463	127	3	182	869	1,222	58,091	1.5	86,927	3	9	140,115
Emmet	14	11	160	392	764	110	83,876	1,798	62	4	------	198	346	37,273	1.2	45,191	12	18	50,141
Fayette	481	16	7,866	279	1,657	96	158,830	32,512	223	100	412	642	1,182	70,075	1.4	102,081	30	40	145,586
Floyd	654	12	7,831	1,959	2,206	62	136,315	17,561	176	51	16	280	662	37,823	1.5	57,135	3	6	64,444
Franklin	282	15	4,204	66	2,141	91	194,482	2,732	59	------	------	555	829	49,532	1.3	64,144	14	34	81,846
Fremont	214	17	3,579	------	689	117	81,010	681	343	49	71	333	2,917	23,604	1.4	31,587	1,819	4,361	74,223
Greene	39	10	391	95	1,029	78	79,789	1,229	24	------	3	538	1,407	42,128	1.4	58,958	26	47	87,711
Grundy	28	16	441	------	8,157	88	717,188	5,706	51	------	32	495	1,022	35,985	1.7	62,269	------	------	71,735
Guthrie	65	9	598	------	834	73	60,922	19,911	225	25	2	449	1,946	37,001	1.5	54,129	3	8	117,690
Hamilton	48	14	662	89	1,013	87	87,918	398	58	10	16	247	964	48,562	1.3	64,156	25	88	90,808
Hancock	147	13	1,896	167	1,047	109	113,951	2,020	79	2	83	310	759	44,785	1.2	53,560	8	64	62,979
Hardin	72	14	977	------	2,786	82	228,065	998	187	18	------	490	1,253	42,532	1.4	60,955	21	46	90,791
Harrison	276	11	2,966	------	1,416	92	130,300	1,093	112	24	1	552	2,421	28,736	1.6	47,937	5,565	12,756	85,370
Henry	697	16	11,495	------	561	117	65,695	4,125	1,345		535	342	1,989	28,516	1.5	42,746	23	81	89,800
Howard	44	18	804	2,848	929	95	88,499	46,151	22	1	2	392	322	43,745	1.4	60,338	4	4	63,537
Humboldt	10	8	75	102	690	104	72,091	1,043	27	2	7	173	844	37,119	1.5	55,572	22	73	56,133
Ida	------	------	------	20	994	107	106,309	1,850	12	1,471	4	150	711	31,739	1.5	47,690	70	151	57,711
Iowa	434	15	6,464	------	1,346	94	126,179	84,910	1,120	7	182	583	2,627	45,051	1.7	76,587	7	27	115,468
Jackson	665	13	8,769	------	1,150	98	112,713	8,279	342	1	1	451	1,215	63,050	1.4	88,283	8	23	167,280
Jasper	401	12	4,917	------	1,694	66	111,347	6,543	2,744	7	20	855	2,636	54,576	1.3	72,015	16	65	143,806
Jefferson	738	14	10,389	------	450	86	38,686	18,730	7,023	1	1	347	1,780	32,303	1.5	48,553	14	35	105,365
Johnson	1,362	14	19,382	------	1,142	84	95,452	12,842	1,429	------	------	511	1,840	38,618	1.7	65,308	------	------	101,462
Jones	642	13	8,099	------	796	120	95,580	3,563	48	1	201	336	779	53,639	1.6	87,677	4	19	122,943
Keokuk	886	12	10,839	------	649	97	63,184	17,169	1,443	80	------	401	2,268	43,464	1.8	77,481	18	21	109,005
Kossuth	51	8	425	1,323	1,670	101	169,103	1,677	142	12	1	517	1,197	98,924	1.1	100,447	11	15	117,073
Lee	3,018	15	45,427	------	1,278	81	103,158	22,214	2,137	12	18	787	2,543	35,790	1.3	48,372	27	102	102,099
Linn	1,145	12	13,358	15	1,929	93	179,335	5,505	315	17	709	753	1,981	55,846	1.5	87,626	14	39	119,924
Louisa	1,998	14	27,876	------	457	110	50,240	2,174	230	4	459	239	1,390	19,917	1.7	34,547	28	95	64,900
Lucas	294	9	2,818	------	388	66	25,753	29,026	399	2	------	383	1,458	38,067	1.2	44,461	7	29	107,652
Lyon	23	18	417	159	1,867	87	162,817	1,305	93	1	1	180	310	33,565	1.6	52,908	55	149	58,289
Madison	116	11	1,226	------	672	81	54,796	15,731	918		11	455	2,498	42,999	1.4	60,416	16	38	128,485
Mahaska	437	15	6,743	48	778	57	44,262	8,262	1,724	11	12	433	2,389	39,795	1.4	57,147	19	78	104,641
Marion	430	12	5,153	------	586	68	39,832	3,957	1,029	------	146	764	2,032	36,862	1.4	51,298	91	284	128,723
Marshall	218	16	3,503	19	2,493	97	242,545	8,535	269	16	100	1,191	1,926	42,057	1.5	62,377	15	125	91,376
Mills	72	10	709	------	806	104	83,609	1,152	55	7	10	332	4,715	22,495	1.6	35,225	2,530	8,762	66,923
Mitchell	75	17	1,295	1,863	1,601	116	187,103	33,632	161	5	47	229	548	32,922	1.5	48,391	------	------	62,905
Monona	126	14	1,733	1	1,344	88	119,318	1,040	52	79	27	432	1,620	31,077	1.7	52,907	3,255	9,677	92,132
Monroe	88	9	841	------	254	71	18,153	3,376	107		1	230	1,176	36,879	1.1	42,638	3	4	109,845
Montgomery	66	13	848	------	681	97	66,411	3,640	38	22	277	192	2,126	28,450	1.5	44,432	499	1,554	72,525
Muscatine	3,447	11	40,722	------	3,165	83	262,004	5,533	177	25	------	2,129	1,320	28,075	1.4	39,970	28	107	80,867
O'Brien	66	11	748	43	1,624	99	160,789	15,821	377	30	7	469	611	41,974	1.6	67,245	8	10	69,907
Osceola	15	14	200	247	918	116	106,713	19,974	62	20	------	210	257	26,184	1.5	40,293	2	6	41,298
Page	246	17	4,158	------	683	132	90,143	3,262	217	30	102	279	3,664	37,225	1.5	55,762	133	457	96,011
Palo Alto	7	18	126	423	994	91	90,455	356	114	300	------	558	543	61,950	1.2	75,964	8	27	82,534

TABLE No. 3—CONTINUED

Counties	Rye			Flax seed—acres	Potatoes			Timothy seed—bushels	Clover seed—bushels	Pop corn—acres	Sweet corn—acres	Garden—acres	Orchard—acres	Hay			Alfalfa		Pastures—acres
	Acres	Bushels per acre	Total bushels		Acres	Bushels per acre	Total bu-hels							Acres	Tons per acre	Total tons	Acres	Total tons	
Plymouth	26	17	436	30	1,972	73	144,290	2,325	83	21	48	430	658	48,424	1.8	89,690	671	2,502	80,449
Pocahontas	87	11	987	478	3,347	36	119,512	770	91	1,298	1	302	3,526	45,558	1.3	58,415	20	53	72,269
Polk	229	13	3,076	------	2,792	65	180,248	1,964	378	170	754	819	3,313	35,010	1.5	52,559	99	202	75,625
Pottawattamie	202	13	2,631	------	2,803	96	268,302	7,670	27	10	225	893	4,555	56,222	1.6	94,659	3,935	12,637	133,071
Poweshiek	162	12	2,002	------	1,047	84	87,463	43,119	1,080	----	------	282	1,997	42,919	1.6	68,481	11	25	106,619
Ringgold	107	8	861	------	199	53	10,511	----------	1	----	------	200	1,753	47,317	1.3	48,820	14	59	115,160
Sac	14	11	150	25	1,120	112	125,299	606	37	3,404	752	380	1,307	44,730	1.6	70,379	173	478	82,363
Scott	1,586	16	25,318	6	8,929	91	809,429	3,479	590	16	19	1,253	2,087	38,306	1.5	59,470	260	530	75,420
Shelby	97	14	1,381	------	1,309	106	138,665	5,899	344	2	75	439	440	45,377	1.6	71,114	116	215	83,880
Sioux	20	10	200	35	1,742	96	167,264	1,750	------	5	------	359	581	51,108	1.7	87,939	319	1,039	88,476
Story	182	19	3,455	17	928	76	70,704	837	49	11	4	314	1,356	42,600	1.4	58,640	29	69	80,363
Tama	410	10	4,172	------	3,343	104	347,829	13,285	528	2	320	382	1,317	57,023	1.6	91,684	9	32	124,231
Taylor	130	11	1,473	------	491	67	32,942	12,941	34	----	------	393	3,091	40,498	1.3	54,323	43	130	120,438
Union	88	14	1,228	------	778	59	45,848	13,952	7	10	30	337	2,153	37,093	1.2	42,884	37	55	92,631
Van Buren	778	13	10,078	------	329	96	31,470	20,005	1,884	51	12	327	2,454	37,251	1.2	42,157	114	325	126,325
Wapello	562	9	5,220	------	855	63	53,640	6,247	535	15	------	595	2,271	31,593	1.3	42,662	13	17	86,357
Warren	298	14	4,172	------	852	67	57,105	10,022	528	1	3	389	2,070	43,294	1.4	59,156	17	69	109,291
Washington	425	15	6,257	------	718	106	76,501	3,113	1,441	3	1	333	2,285	40,361	1.6	64,231	10	41	111,476
Wayne	109	9	890	------	212	71	15,107	48,715	251	1	6	359	1,999	59,834	1.1	62,614	5	16	119,093
Webster	69	18	1,255	129	1,312	89	116,935	725	103	6	------	392	1,543	56,235	1.3	73,610	13	45	95,371
Winnebago	19	22	416	609	901	122	110,513	2,341	7	7	495	116	558	41,872	1.5	63,445	4	8	52,371
Winneshiek	220	18	4,008	1,759	1,367	115	157,888	60,001	131	24	5	506	1,193	61,015	1.6	99,791	------	------	131,427
Woodbury	42	15	635	40	1,813	94	170,297	3,125	210	57	72	364	1,580	47,113	1.6	77,451	1,639	5,265	97,015
Worth	36	10	372	1,423	749	95	71,038	12,477	------	5	5	60	623	39,512	1.1	60,448	------	------	52,570
Wright	15	5	74	113	1,226	84	103,334	51	788	4	1	346	758	47,816	1.2	59,454	------	------	75,777
Total	41,606	13.4	556,846	17,365	138,139	90	12,427,595	1,067,538	11,598	8,868	14,083	44,874	157,199	4,333,983	1.4	6,311,874	23,041	65,806	9,466,798

TABLE No. 4

Number of horses all ages, mules all ages, average number cows milked, cattle all ages, also number of cattle shipped in for feeding and number sold for slaughter; average number of hogs and sheep kept on farms; number sheep shipped in for feeding and number sold for slaughter; average number poultry kept on farms and number marketed during the year; also approximate number of dozens of eggs received and the approximate number of dozens sold, by counties, for the year 1909.

Counties	Horses (all ages)	Mules (all ages)	Cattle (all ages)	Cattle			Average No. of hogs kept on farm including pigs)	Sheep			Poultry			
				Average No. of cows milked	No. shipped in for feeding	No. sold for slaughter		No. sheep kept on farm	No. sheep shipped in for feeding	No. sheep sold for slaughter	Average No. kept on farm	No. marketed during the year	Approximate No. dozen eggs received	No. doz. eggs marketed
Adair	15,736	676	58,779	10,409	1,725	17,714	73,912	9,794	1,438	3,211	225,450	99,414	837,288	566,371
Adams	11,108	901	41,538	5,964	3,107	12,444	57,101	11,840	954	5,105	195,683	78,341	631,456	451,619
Allamakee	16,766	119	55,250	19,149	3,677	10,489	57,985	12,576	231	4,313	203,951	64,451	794,220	614,538
Appanoose	9,024	982	32,615	6,953	247	6,173	25,304	12,197	1,276	2,734	147,020	61,383	471,119	376,732
Audubon	11,865	422	48,314	10,606	1,254	14,945	65,160	6,744	1,815	3,809	193,342	78,095	807,009	518,597
Benton	18,328	505	67,955	12,871	2,165	13,178	91,420	9,214	7,045	7,978	271,100	138,306	1,097,672	657,232
Black Hawk	13,596	90	53,721	14,887	3,496	9,933	71,422	4,816	3,518	4,626	215,869	79,733	851,582	603,953
Boone	13,788	429	43,759	11,399	2,054	9,615	49,257	2,460	418	1,007	303,618	96,436	1,007,031	734,462
Bremer	10,067	22	42,957	20,691	717	2,617	54,503	2,643	176	975	209,678	81,289	811,916	663,319
Buchanan	12,462	131	48,249	14,661	1,130	6,416	63,627	4,981	544	2,196	255,479	114,374	1,069,327	756,907
Buena Vista	12,864	192	48,770	11,252	1,626	11,465	57,836	2,948	72	1,195	210,432	72,835	708,546	475,772
Butler	13,295	154	52,300	14,978	996	4,484	56,167	4,114	201	1,056	238,456	94,659	858,854	646,469
Calhoun	14,570	564	31,958	8,776	997	6,794	42,627	2,949	119	840	202,919	78,744	669,241	444,909
Carroll	13,531	425	47,590	11,585	1,726	7,404	70,108	2,923	2,308	2,862	284,919	80,470	721,600	556,838
Cass	16,060	1,141	56,414	8,108	3,810	15,868	86,413	11,895	3,917	8,037	214,316	101,125	813,148	550,507
Cedar	16,605	788	59,927	10,105	5,589	18,279	117,540	18,143	16,503	18,658	262,101	144,217	1,220,302	876,313
Cerro Gordo	12,075	132	44,717	11,019	581	8,680	55,905	4,239	----------	1,762	181,444	89,369	579,221	442,822
Cherokee	13,532	309	55,058	7,656	6,778	14,821	79,373	4,869	2,880	4,634	187,959	48,641	733,323	491,107
Chickasaw	11,096	16	44,183	16,240	104	5,981	45,392	3,699	----------	1,155	206,250	87,892	933,557	765,880
Clarke	10,830	574	35,143	5,942	560	11,071	40,889	5,074	653	2,426	157,312	60,774	610,423	433,688
Clay	11,304	133	44,863	11,576	1,447	9,542	55,461	10,560	2,370	4,035	194,223	56,487	574,543	433,036
Clayton	16,385	81	60,166	21,262	3,868	12,945	105,127	14,126	1,012	5,666	310,390	110,040	1,313,863	998,666
Clinton	17,174	196	78,118	18,041	14,884	21,230	106,825	3,297	854	1,772	254,641	95,605	978,417	675,239
Crawford	16,639	673	67,724	11,557	10,066	22,688	110,133	7,383	8,304	11,217	288,790	81,668	993,300	638,158

TABLE No. 4—CONTINUED

Counties	Horses (all ages)	Mules (all ages)	Cattle (all ages)	Cattle			Average No. of hogs kept on farm (including pigs)	Sheep			Poultry			
				Average No. of cows milked	No. shipped in for feeding	No. sold for slaughter		No. sheep kept on farm	No. sheep shipped in for feeding	No. sheep sold for slaughter	Average No. kept on farm	No. marketed during the year	Approximate No. dozen eggs received	No. doz. eggs marketed
Dallas	12,942	592	39,230	10,060	6,863	17,931	48,856	4,573	940	1,913	241,885	106,267	955,553	672,186
Davis	11,971	735	36,239	7,668	921	9,349	40,115	62,709	3,831	8,984	219,218	104,635	923,772	656,466
Decatur	12,429	894	31,127	6,407	1,016	11,017	42,312	12,516	678	4,571	176,459	74,358	762,009	620,306
Delaware	12,421	122	53,852	19,750	1,045	8,369	91,252	6,172	2,605	4,194	239,782	100,556	908,792	602,899
Des Moines	10,124	361	27,498	6,016	2,708	7,607	49,115	2,812	296	666	202,171	88,296	881,836	614,826
Dickinson	5,728	84	25,633	6,088	908	5,076	23,104	5,674	3,008	2,253	85,192	33,135	318,040	245,695
Dubuque	12,347	34	51,739	16,812	1,679	11,011	89,278	6,806	81	2,936	217,676	74,775	791,862	519,739
Emmet	6,471	86	24,993	6,697	1,327	3,919	22,250	8,538	4,240	4,681	100,774	38,310	327,885	224,598
Fayette	16,308	200	73,683	25,008	2,705	11,256	80,097	9,405	508	3,501	337,218	148,922	1,583,104	1,237,047
Floyd	11,632	57	42,430	10,605	2,212	8,441	18,184	6,926	551	3,054	221,732	93,374	854,083	610,666
Franklin	13,313	122	49,226	12,030	1,455	9,186	56,459	7,173	5,315	4,788	216,026	91,568	850,675	648,760
Fremont	10,785	2,190	27,413	5,104	17,881	18,097	45,692	3,651	4.549	3.456	161,027	70.769	463.317	316,126
Greene	15,495	426	42,446	9,407	1,605	11,040	57,380	2,245	3,112	3,805	252,546	97,255	1,027,019	714,079
Grundy	12,754	286	55,470	12,041	1,711	11,708	71,080	6,198	3,731	3,086	242,773	73,595	800,345	583,226
Guthrie	12,653	469	43,879	9,067	2,219	12,629	57,140	4,945	2,333	1,969	151,338	76,418	577,013	442,846
Hamilton	15,597	401	46,503	11,460	3,841	8,107	73,951	5,408	275	3,175	285,217	98,490	806,560	665.210
Hancock	10,375	152	36,425	11,526	1,467	3,267	39,431	2,170	976	1,954	187,527	82,589	688,655	449,867
Hardin	12,924	331	46,480	10,446	808	13,012	61,699	3,360	5,278	5,951	299,387	107,442	2,057.620	839,863
Harrison	12,264	1,288	42,681	7,773	9,728	13,917	72,622	5,146	7,529	7,064	247,296	85,010	1,136,588	744,618
Henry	13,112	585	31,865	5,310	1,738	9,899	49,913	28,444	1,288	7,076	242,837	94,178	803,972	776,342
Howard	8,269	36	38,600	11,356	2,265	4,312	31,316	7,920	267	2,662	125,005	67,069	583,991	554,710
Humboldt	9,735	132	38.450	86,225	1,320	8,726	46,806	3,256	1,233	3,234	164,618	81,647	621,009	402,202
Ida	10,150	429	59,638	5,824	8,663	12,437	64,990	3,940	2,923	2,575	155,595	60,520	483,891	360,900
Iowa	16,392	765	63,423	11,106	4,544	21,749	95,320	11,375	1,774	5,958	287,734	114,662	1,165,504	724,551
Jackson	12,450	208	62,170	17,182	6,108	15,216	80,977	6,991	109	2,348	209,210	84,101	682,064	456,758
Jasper	22,217	1,059	66,162	10,916	2,469	17,296	109,709	12,199	1,617	6,070	362,965	150,789	1,552,936	1,076,162
Jefferson	12,824	322	34,548	6,360	897	7,194	53,881	10,903	1,149	4,127	227,986	315,808	100,537	757,574
Johnson	13,379	555	44,147	6,846	3,830	9,901	84,260	10,028	1,347	3,458	241,856	87,022	779,930	655,201
Jones	13,626	235	62,092	16,434	1,997	17,087	87,783	5,836	1,236	2,601	253,927	88,248	904,717	633,964
Keokuk	17,585	743	53,957	8,313	1,235	13,460	86,851	8,376	2,325	4,062	332,372	122,634	1,282,486	971,300
Kossuth	16,502	168	59,820	16,669	1,890	7,766	65,817	7,038	580	3,405	324,917	139,661	1,029,869	704,661
Lee	11,302	773	29,962	7,200	1,968	4,917	36,989	27,964	2,009	5,609	247,441	97,228	1,015,551	802,765

Linn	16,108	307	61,628	15,026	1,970	12,707	88,618	13,077	2,423	6,451	348,841	134,710	1,029,818	747,131
Louisa	9,834	239	27,733	2,347	4,226	8,289	27,599	4,317	3,435	4,850	84,400	93,945	584,051	412,869
Lucas	10,957	861	33,678	6,382	614	8,610	37,557	12,094	1,456	4,300	175,684	82,352	716,218	558,537
Lyon	11,630	100	41,201	9,634	2,049	6,374	56,385	4,063	471	2,746	154,318	47,414	517,255	312,129
Madison	14,757	1,021	52,451	7,351	1,350	14,443	74,749	13,016	2,342	5,206	254,926	83,078	950,420	747,002
Mahaska	16,003	896	41,499	9,341	1,690	7,914	87,033	22,406	5,786	5,333	307,031	107,750	1,182,401	942,794
Marion	17,238	817	48,043	7,619	2,103	10,986	74,740	22,103	17,075	14,762	291,545	109,545	1,175,637	816,199
Marshall	15,637	523	51,467	9,671	1,917	12,085	79,831	10,601	4,305	6,080	264,436	93,230	900,615	607,375
Mills	9,322	1,027	28,641	4,738	6,921	9,737	85,281	6,585	5,300	3,248	111,532	45,225	463,147	272,230
Mitchell	9,977	51	43,616	9,226	2,197	8,012	37,454	5,397	1,054	2,905	188,804	69,467	722,451	569,884
Monona	13,589	1,259	39,215	8,007	3,663	8,009	58,982	1,603	1,245	1,199	206,526	70,254	825,681	534,957
Monroe	8,474	945	27,780	6,307	1,097	11,757	25,283	4,852	203	1,036	127,418	63,721	530,806	361,416
Montgomery	11,127	934	42,681	5,617	4,459	11,943	73,489	5,007	2,107	3,617	184,479	70,877	613,231	422,158
Muscatine	10,882	408	37,943	6,510	6,605	14,158	56,549	4,596	1,144	2,688	182,751	72,358	686,818	435,346
O'Brien	12,262	245	49,501	10,529	702	11,265	53,721	14,936	774	10,099	169,212	54,775	592,429	403,946
Osceola	7,233	108	45,069	6,245	414	4,301	28,922	4,621	556	2,489	102,717	38,026	732,772	282,387
Page	17,696	1,608	47,202	7,523	6,585	13,741	82,171	11,677	7,171	6,863	213,019	99,727	640,952	476,213
Palo Alto	9,437	95	45,252	11,361	1,117	7,628	33,127	3,533	574	1,439	182,862	64,870	493,594	344,638
Plymouth	16,532	377	59,502	10,382	6,171	13,570	80,061	3,634	198	2,678	194,409	49,994	853,394	452,740
Pocahontas	12,764	307	37,860	9.437	759	6,766	40.459	3,990	1,211	1,183	244.129	142.039	773,181	589,551
Polk	16,532	732	37,354	9,494	1,924	9,204	54,167	3.063	448	4,568	268,511	107,979	999,369	581,526
Pottawattamie	20,163	1,861	76,273	12,178	15,186	25,089	124,015	6,013	16,965	10,629	354,734	123,394	1,512,028	974,232
Poweshiek	16,942	730	58,895	9,619	5,651	19,906	92,312	8,781	850	2,802	241,963	102,692	877,463	619,234
Ringgold	13,076	1,248	41,629	7,836	520	11,401	50,485	8,920	574	2,572	168,889	79,401	763,611	636,038
Sac	15,261	565	52,282	9,189	4,335	11,402	64,832	20,223	1,545	17,348	211,371	72,906	991,601	667,942
Shelby	15,581	605	66,524	10,037	6,592	14,603	91,248	8,559	16,521	15,019	251,163	106,705	978,873	608,564
Scott	12,011	385	44,358	13,846	2,996	11,993	79,069	1,852	156	745	218,036	118,031	1,062,679	640,628
Sioux	18,667	232	72,644	14,946	2,581	11,550	97,900	13,546	5,885	7.601	272,937	49,913	1,132,506	792,909
Story	16,673	430	14,196	10,611	1,295	6,178	68,298	3,590	1,464	2,319	330,446	170,292	1,220,540	995,856
Tama	19,002	364	78,934	13,328	4,753	22,529	109,318	10,581	4,865	6,937	361,793	135,676	1,331,630	901,955
Taylor	14,597	1,446	43,690	8,281	1,409	15,217	67,234	14,102	407	6,206	201,824	76,041	849,134	609,924
Union	11,098	633	36,481	6,473	57	9,648	45,303	6,822	1.530	4,420	151,129	71,480	607,049	426,347
Van Buren	11,932	709	30,548	6,008	1,029	8,122	36,349	41,373	348	13,633	210,984	97,941	1,086,521	799,825
Wapello	9,361	606	28,156	7,152	1,266	7,502	38,240	14,431	679	5,210	141,871	130,268	678,181	597,350
Warren	16,560	461	44,610	8,110	1,949	14,359	65,180	9,682	2,632	5,672	217,431	90,715	925,385	663,214
Washington	16,052	891	45,390	6,870	4,907	15,188	104,341	13,054	4,332	6,671	298,859	97,313	1,221,613	893,279
Wayne	14,416	1,436	41,443	7,099	1,191	10,816	50,438	10,021	3,377	4,040	196,232	83,103	812,925	593,443
Webster	16,195	496	45,629	11,962	1,452	9,671	41,802	2,657	365	1,008	276,326	99,139	926,453	614,055
Winnebago	7,605	66	33,202	11.061	612	2,681	29,702	2,793	78	522	141,230	54,088	541,629	421,927
Winneshiek	15,440	59	64,233	19,945	1,970	15,562	81,859	19,391	764	7.515	310,301	88,592	1,194,820	869,408
Woodbury	16,878	738	50,073	9,388	9,228	14,911	76,399	7,387	3,625	5,318	231,572	76,307	1,028,616	653,317
Worth	7,940	49	34,540	10,609	553	4,346	30,369	2,181	169	523	145,620	59,093	532,920	410,970
Wright	14,217	286	42,642	10,465	204	7,610	18,637	4,406	92	1,433	193,397	91,584	658,328	441,194
Total	1,322,464	51,654	4,637,587	1,107,333	301,896	1,101,488	6,312,634	889,726	250,502	448,338	22,062,707	9,022,692	84,726,975	60,361,886

Swine Barn and Pavilion—Capacity 3,000 Hogs—Area Under Roof 3 Acres—Iowa State Fair and Exposition Grounds

PART IV.

PROCEEDINGS

OF THE

Joint Session of the Annual State Farmers' Institute and Corn Belt Meat Producers Association.

HELD AT

Savery Convention Room at the Savery Hotel, Des Moines, Iowa, on December 7, 1909.

A joint meeting of the State Farmers' Institute and the Corn Belt Meat Producers' Association was held in the convention room at the Savery Hotel, Tuesday afternoon, December 7, 1909. The meeting was called to order at 1:30 o'clock p. m. by Mr. Sykes, president of the Corn Belt Meat Producers' Association, and the following program given:

Invocation	Rev. Arthur Metcalf
Address	Hon. Henry Wallace
"The Evolution of Live Stock Transportation"	James Downing, of the U. S. Bureau of Animal Husbandry
"Hog Feeding"	R. M. Gunn, Black Hawk County

A complete report of the foregoing addresses and discussions follow:

Invocation by Rev. Metcalf, of Des Moines.

President Sykes: Our first speaker on the program is a gentleman whom we have heard for years. He is one of our old landmarks, a man whom we delight to honor, a man who probably has done more for the farmers of Iowa (I think I can say that truthfully) than any other man engaged in his line of work. We will hear from Uncle Henry Wallace:

CONDITIONS OF COUNTRY LIFE.

HENRY WALLACE, DES MOINES, IOWA.

Mr. President, and Gentlemen of the Convention: Mr. Simpson has suggested that I tell you something about the work of the Country Life Commission. I can only hit the high places, but will give you first a very brief outline of our methods and our objects.

The object of President Roosevelt in appointing that commission was to ascertain the facts about country life—the life of the people living in the open country—at first hands from themselves, to know what they had to say about it and how well they were satisfied. Therefore he appointed five men: Prof. L. H. Bailey, dean of the Agricultural College of Cornell University; Kenyon Butterfield, president of the Massachusetts Agricultural College; Gifford Pinchot, of whom you have all heard; Walter H. Page, editor of the World's Work; myself; and subsequently added C. S. Barrett, president of the Farmers' Union of the South (a body with 1,780,000 persons in active membership and paying their dues, which in itself is a most surprising thing), and W. A. Beard, who had been in agricultural work upon the Pacific coast. We sent out 500,000 circulars asking questions on several points—sanitation, education, co-operation, transportation, communication, banking, the tenure of lands, the conditions of labor—and we received 125,000 answers, some frivolous, some covering only one or two points, but most of them exceedingly serious. It was a good deal to have 125,000 men sit down and answer those questions in detail, and in itself was an education. I sent out myself some 28,000 circulars asking questions specifically on tenancy, land ownership, and labor, and received about 8,000 answers. Then in addition we received a vast amount of matter—essays, arguments, data—from men who were particularly interested in some one thing. We have not been able to read more than simply samples of all this vast mass of information, which Sir Horace Plunkett, who knows something about it, says is the most valuable contribution to agriculture that has ever been made anywhere, and congress refused to furnish $25,000 for tne purpose of tabulating the data and placing this matter where it could be within reach of men who were students—and that on the motion of Tawney of Minnesota, the only standpatter in the whole state!

In addition we made visits to twenty-five states and received delegates from thirty-five or forty. We simply called together at some convenient point by invitation on our own letter-heads, men who were reported to us to be competent to give testimony. We had from fifty to five hundred at these meetings, of which we have brief stenographic notes.

Now, there are two or three points of our investigation that may interest you. First, on the question of sanitation. We found the country all over unsanitary—most unsanitary in the South, where they have a disease called the hook worm, a parasite very similar to our ground worm, only much smaller, and which the profane newspaper (I wish those people had reverence) call the "lazy bug," claiming that it makes the people of the South lazy. The fact is that it gets into their feet when they are barefooted—and most of those poor southern white farmers go barefooted. They have no privies, or at least very few, and those in bad condition. The effect of the hook worm is not merely to draw the blood, but to poison the system and decrease the red corpuscles; so that one-fifth of the children born down there on those farms die, and the rest are comparatively feeble. I am not going to discourse to you on the hook worm, but simply say that it was the developments in connection with the Country Life Commission that led Mr. Rockefeller to give a million dollars for the purpose of cleaning up that southern country. The man to whom the honor is due is Dr. Stiles who was our attache. He had discovered this worm while spending some time in North Carolina, and being an expert in parasitic diseases, having been employed by the Department of Agriculture for three years for the purpose of advising our ambassador to Germany, he knew perfectly well what physcians to call and what testimony to get.

We came across pellagra—the first time I ever heard of it—which is due, according to the best medical testimony, to the eating of grits, which is a dried product of the distilleries. That disease has been taken up now and discussed all over the United States, and it is a most serious thing, but not serious to farmers who don't eat any moldy corn meal.

In this same question of sanitation we came up against the smallpox problem in Texas, where we met with the Mexican who has had smallpox for so many generations that he has become immune to it and simply has a rash, but gives it to the white sheep shearer when he starts from the south to go up north to shear the sheep.

We found a very bad condition of things in the Middle States in the shape of the country slaughter house—which is always found at a slough, and no two of them together—to which the farmer sends his cows that he is afraid have tuberculosis, and they are killed and the offal fed to hogs, which, of course, get tuberculosis. If there is any trichina, you are very apt to find it in the hogs from that country, and you find rats which carry the disease, and there is no telling where that ends. It is fortunate for us that we cook our meats; if we ate our ham raw, as the Germans do, we would have trichina without any doubt.

So much for sanitation. The thing that surprised me was that in the thirty states that we visted there were more complaints about our common school system than anything else, and the only reason we didn't have complaints from the one state not complaining of the present system was that this state didn't have any common schools. We found in the southern states that there is a great movement toward having agriculture taught in the public schools. We found in Georgia they had a number of agricultural high schools, and also in Nebraska; but we didn't find any great efficiency in the teaching of agriculture there, and I might say here that the only places I have ever found it effective are Wisconsin and Canada. Subsequently I met a couple of gentlemen who were working up the Canada plan, which is to send an agricultural college graduate to a high school in a city, have him open an office in town, where he spends his afternoons and acts as the adviser of the farmer, and teach certain classes in the high school in the forenoons. If a man wants to know anything about running his farm he goes in and consults that graduate, and the graduate goes out to see the farmers. That experiment is working fine.

We had some very interesting inquiries on the subject of co-operation which may interest you. We didn't find any co-operation in the south except the co-operation of the Farmers' Union, which I was clearly satisfied was on wrong lines, and which is being changed now. I think one benefit of the commission was the conversion of the president of the Farmers' Union. They were starting out on the idea that their union was to fix the price of cotton—and the first two years it stayed fixed, because cotton was advancing; but they fixed it at 12 cents a pound the year we were out, and they could get but 9 cents. Now they can get 14 or 15. We gave them the idea that they should arrange to hold their cotton and loan money to men who were forced to sell (you have no idea of the poverty of the southern farmer; I will tell you about that by and by), and then persuade the farmers to raise their own vegetables and pork and keep cows, and live off their farms and sell the cotton as a cash crop, in which case they couldn't be forced to sell it and would have a relatively higher price the year around. Do you know that half the cotton in the southern states is raised by men whose total income is $160 a year average, on which they have to keep an average family of four persons and pay about twice as much for products as you pay? The southern farmer mortgages his crop to his landlord before it is grown; the landlord transfers it to the merchant and the merchant to the bank. Do you wonder that the farmers are poor? Mr. Rockefeller, bad and corrupt man as he is, is getting some most excellent fire insurance by spending about $200,000 a year in hiring men under the guise of the Department of Agriculture to go out and teach these people the first elements of farming, and they are doing it most successfully, and starting in the way of revolutionizing and regenerating the south. In fact, when he gets the hook worms out of those people and gets them taught how to raise their own stuff instead of buyng from the north, you will see a new condition of things in the southern states.

Now, when we came to California we came across a wonderful system of co-operation in selling—what is called the Citrus Fruit Growers' Association. I think there are two of them; we investigated one. They don't aim to fix the prices of citrus fruits at all, but they aim to know the size of the crop, to understand how to handle it and to feed it to the market as it takes it. They have a competent man at the head of it whom they pay a salary of $8,000 or $10,000 a year, and he is not a fruit grower, either. They got the best business man they could find without reference to what his occupation was, and said to him: "Now you handle this stuff." Then they put men in the large cities to whom they pay about $5,000 each, and they market almost the entire citrus fruit crop and a large percentage of the raisins, and they are doing it most successfully. It is a splendid system of co-operation in selling. Those citrus fruit fellows send a car load of oranges to New York, and when it gets to Kansas City or St. Louis if they find out by a telegram from their New York man that New York is full, and they can market the car in Des Moines, they will switch it (so with any other place), and thus feed it to the market.

Then accidentally at Denver we ran across another sample. Some old farmer out there some years ago, when wheat was only worth 28 cents a bushel, conceived the idea of grinding their wheat. So he built a mill, got his neighbors into it by agreeing to market the wheat grown in that irrigated country, and without attempting to fix the price, sell it at such a price as would keep Kansas flour out, and it has become a tremendous business, with two or three mills. I think one of them has a capital of about a million dollars. There is a splendid system of cooperaton—not fixing prices, but having uniform quality and then controlling the market.

Now I want to say to you that we found many cases of attempts at co-operation. Many of them were failures through lack of business management, and also through the lack of confidence in co-operation among themselves. There was a fear that some other fellow was getting the better of them. They didn't have the capacity of holding together; in other words, they didn't have enough intelligence, because co-operation is only possible among people of high intelligence and men who have confidence in each other; and then it is possible only when carried out on business lines.

Sir Horace Plunkett, as you know, was here and spent a week with us. He has organized through his association a thousand co-operative organizations in Ireland covering different things, from what we call grain stores, such as we have in some parts of this state, buying farmers' supplies at wholesale, to banks, among the poorest of the poor, where the individual has not a cent's worth of credit on the face of the earth. And yet they are taking the best of those poorest of the poor and getting them together, the government is lending them money to begin with—$50 or $100—and that is given out only for productive purposes, and then it must be recommended by a committee who believe that that productive purpose is a wise one; and they have built up 140 banks. I mention this to show you the extent to which co-operation is possible. We don't need it here, because we are not the poorest of the poor, and we are not as poor as these fellows over there are, but I want to show you the way in which co-operation can be carried out.

Now, when we come down to conditions, we found them better in these central western states—Nebraska, Kansas, Missouri, Iowa, Minnesota, Wisconsin and Illinois—better than in any other part of the Union, New England not excepted; and yet we found that there was bad sanitation in those country places; there was typhoid fever when there ought not to have been, because of wells; there was consumption where there ought not to have been, because people didn't understand how to ventilate their houses; and, splendid as the condition is compared with other parts of the country, it is very far below what it should be.

Now I want to make a suggestion, and then I am through. We are having good times in Iowa now. You fellows have made more money while you slept in the last five years than you ever made in your lives before, or your fathers ever made before you. Unfortunately, the prices of the things you sell off the land are high, and so you are getting rich—or think you are, which is about the same thing. You are making money, or think you are. But I advise you not to put your hands in your pockets and say that you are Napoleons of finance and wonder why your sons or nephews who work farms don't make money the way you do. You didn't make any money; you simply took in the unearned increment. By and by some Lloyd George will come in and cabbage on to that unearned increment, if you don't look out. In the future we have got to hang together or hang separate, whichever you like. The suggestion that I want to make is that you begin to get together and understand each other. You have made a beginning right here; in fact, I am surprised to see how many of you do hang together. And then I am surprised at the number of people who won't hang with you when it comes to selling your stock. The great trouble with us is that we are all too strong individually and don't feel the need of pulling together. The farmers all over the United States don't know each other. They have been dumped in here from every country in the world, or the best countries in the world—England, Ireland, Scotland, Sweden, Norway, Denmark, Germany and Prussia—and they haven't lived long enough together to really see eye to eye. We must learn to get together. I am not a granger, as you know, but when we were down in New England and met delegates from Massachusetts and New York we found that wherever there were granges all over the country they had a better social life than where there were not. We found that they were able to work together, particularly in life insurance and some of the smaller forms of co-operation. I invited the National Grange to come out here, because I wanted them to see you and you to see them, in the hope that their example would lead to a better development of the social life in the country in this state and adjoining states. The trouble with us is that we are all looking to town. The farmer longs for the day when he can go to town and when he won't even need to read an agricultural paper. That is the reason so many of them die early; they miss the stimulus that a good agricultural paper gives them. They need it just as much in town as they do on the farm, or they will get dyspeptic. That is the reason there are so many towns full of dried up farmers. You want to get your ideas turned away from that; you want to develop a social life of your own. The merchant doesn't want you in his store; he doesn't ask you to his house; you are not interested in the things that he is. Why should you cultivate his society and come to town to learn to play bridge, and mortgage your farms to buy automobiles? What we want is to understand each other and farm and develop social life in the country. There must be some nucleus to gather around. In some places it is a grange, and I found in Kansas when I was out there for institute work that wherever I would strike a neighborhood with a grange I would find better social life, better farms and better people, due to the education that the grange gave.

But you don't need the grange to do that. I found here and there a place where there was a corn club started. I struck one the other day—some people in the town told me about it—where about thirty or forty boys had formed a corn club and reorganized the whole society of the neighborhood; and one woman wrote that there was not a boy in that club that had a bad habit. That gets them together. I wish you had an old-time spelling school in every school house to get you together. Think it over and arrange to form a club in your own neighborhood like one that has existed in the southern part of this state for sixty years and been a center. Occasionally it will be a central high school that will furnish such an educaton, so that the farmer doesn't need to go to town to educate his children, but finds better society in the country. I am not advocating central high schools; I am simply showing you that that is one of the points around which farmers organize and learn to trust each other and get together. The one thing that we want now is a social organization, and I don't care around what you organize it. There are some places in this state where you have women's clubs. My wife in her lifetime had a scheme of organizing the women of Iowa and adjoining states into a club—it might be literary, domestic, or what they liked. She hadn't the health to take hold and organize it, but it would have been a great blessing if she had, as would be anything that gets the farmers together, so that when the time comes for co-operation they can co-operate.

In Wisconsin the farmers have got together and determined to raise just one breed of cows. What is the result? Why, the people from all over the United States go up there for those cows; they are worth $10 a head more than ordinary cows. If the farmers in any part of Iowa will get together and decide whether they will raise Percherons or Clydes, or whether they will grow Short-horns or some other kind of horns, we will see a difference. Let's all work together and do the same thing, so that if a man wants a car load of horses or stock, he can come here and pick them up. Men come to me and ask where they can get a car load of draft horses; they want to buy a whole car load of a certain kind at a time. I can't tell them where to go, because I don't know a town where there are enough to supply that want. I am simply giving you illustrations. When you get society in the State of Iowa organized in some way so that the people understand and know each other there will be no difficulty in organizing for anything that you want, even if it is to clean out some congressman who has gone back on you. You can drive out saloons or do any other "bloomin'" thing you want to. You are a power in this country if you only knew it. You don't know it, because you don't know each other and don't understand each other and can't work together. As I said in the beginning, you must either hang together or hang separately; take your choice.

DISCUSSION.

Q. I would like to ask Uncle Henry what figure the telephone industry cuts in the way of influence.

Mr. Wallace: It works both ways. It excuses people from seeing each other when they would be better off to do so; and then it develops in some neighborhoods in some people a very nasty, gossiping, eavesdropping habit; so that people are often afraid to ask the price of stock down town over the telephone for fear their neighbor will hear it. But the telephone is a good thing, and it is quite common—not so common elsewhere as in Iowa.

There is another thing that I didn't mention, and that is the demand all over the country for the parcels post.

Q. Is it not quite generally believed that one of the greatest needs of the farmers at the present time to develop sociability is some improvement of the country roads?

Mr. Wallace: Yes. I am in doubt about that, though. With the farmer's mind now turned to town, if you had every road macadamized he would go to town instead of going to see his neighbors. A flying machine wouldn't keep him from town. I might say that the commission found everywhere a demand for better roads, and in the South we didn't even smell where a state's right had been. You know the people down there don't want the government to meddle with their affairs, but they all wanted us to build turnpike roads.

Q. Is it true that the rural mail delivery has broken off the habit of going to town to a great extent?

Mr. Wallace: Yes, to some extent; it has worked both ways, too. It has given the farmer an opportunity to get the daily paper, and if he always got the best daily paper it would be all right; but sometimes he doesn't get the best, but one with advertisements that his children should not read. But the more rural routes we have the better; we must have them. We couldn't do without the telephone. And in a few years more you people won't do without automobiles, and then you will get together and have good roads.

Q. Isn't rural agricultural education one of the great needs of our country at the present time?

Mr. Wallace: It is felt to be so all over the United States, and yet here is the difficulty. As I told you, in Texas they have a law requiring agriculture to be taught in every public school, and yet we didn't hear of a teacher who could teach it; they were not even examined on it.

Q. Well, aren't they like the boy who invited George Washington and his whole army to dinner—haven't they attempted too much?

Mr. Wallace: Yes, I think so, but I think we are getting on the right track in two or three counties in this State. In Page county, where Miss Jessie Field is superintendent, the reputation is such that they had seventeen state superintendents from the South come up to look over her schools and work. Mr. Benson has done fine work in Wright county, Capt. Miller in Keokuk county, and there is some splendid work being done by Mr. Brainerd in Harrison county. With our present laws, if you get the right kind of a superintendent, a great deal can be done toward teaching agriculture in the schools; but I wouldn't want it taught from the textbook, because then the ordinary teacher would pound it into the pupils just as you would pound sand into a rathole, and disgust them, just as we used to be disgusted with the Shorter Catechism. It was useful afterwards, but after all it didn't give a very great taste for matters theological. My idea is that we want teachers who can teach agriculture in the spirit of the farm. Miss Field out there has the children bring in some milk, and she tests it and finds out the percentage of butter fat. She has them compare the amount of milk given by one cow with that given by another; and she can make out any amount of questions. The same with testing seed corn and encouraging the children to profit by that. She shows them how to get things into their heads, not from the outside, but to see things themselves; and all good education is simply enabling a man to see the thing as it is and then to tell it as he sees it. Somebody said that a man who can shoot and tell the truth is a pretty well educated man. The main thing in education is to see things, and a teacher with the right spirit can do a great deal in that line.

I heard a funny story the other day. A friend of mine had his little granddaughter come to visit him, and he tried to find out how much she knew about potatoes. So he started in to ask her questions—add so many to so many and subtract so many—you all know how the questions read in the arithmetic. She couldn't do it, and she broke down and he scolded her. "Well, grandpa," she said, "if you had put that in oranges instead of potatoes, I could have done it." The trouble with our schools is our arithmetic. You haven't teachers, as a rule, that really know things on the farm and are willing to teach in the spirit of the farm. I don't blame teachers much, though. I have known a farmer to go past a school house two days in a week to see how a tennant was feeding a carload of hogs, but he never stopped to see how the teacher was feeding his children.

President Sykes: If there is nothing further on the subject, we will now listen to an address on "The Evolution of Live Stock Transportation," by James E. Downing, of the United States Bureau of Animal Industry. Mr. Downing is in the employ of our Uncle Jim Wilson, you know, and he must be pretty nearly right if he is working for Uncle Jim.

THE EVOLUTION OF LIVE STOCK TRANSPORTATION.

JAMES E. DOWNING, Washington, D. C.

Mr. Downing: Mr. President and Gentlemen: It has always been my ambition to at some time in my life be able to stand up before a body of men such as are here today and talk offhand, as Uncle Henry has; but every time that I have been called on to contribute to a program something has come up that has taken my time, so that I have been unable to commit my speech to memory; and this afternoon I will have to ask your indulgence while I confine my attention to the manuscript.

Getting the steer to market is a task which has occupied the hands of stock raisers for many years. At a time within the memory no doubt of some here today cattle and sheep could be sold in distant markets only after they had been driven on hoof a long journey that sometimes stretched into a thousand or even fifteen hundred miles. Between the then and the now of live stock transportation there have been many changes and developments. They came slowly at first, but how they came constitutes one of the interesting stories of the country's growth. And while today's methods appear crowded with important problems and contentions, it is patent to all that great strides have been made in this very important industry.

At this time permit me to direct your attention to two periods of live stock transportation history in the United States since the establishment of railroads. A marked characteristic of the first period was the injury caused through lack of accommodations and the faulty methods of managing the traffic. The suffering and death of animals on the way, and the unhealthy condition of many delivered at their destination, called forth much comment and many efforts for relief during the years following the civil war. The second period, the present time, is characterized by special built cars for comfort and speed with a view of delivering the animals in the best possible physical condition. The advent of railroads marked the turning point in the growth of the live stock industry. Scarcely more than a half century ago the carrying trade of the United States was practically limited to passenger traffic and what is known in railroad circles as "dead freight."

Before the civil war it was the custom to drive on foot through the open country to market. One route from the bluegrass region of Kentucky to New York City covered about 800 miles, and according to a man who drove the route several times, it consumed a few days over ten weeks. The particular route followed on one occasion led from the neighborhood of Lexington, Ky., to the Ohio river, just above Maysville. Thence northwesterly through Chillicothe; thence across the Ohio river below Wheeling, West Virginia. The course then passed through Connellsville and Bedford, Pennsylvania, to Carlisle; thence to Harrisburg. Here the road turned southeasterly, passing within sight of Lancaster, through West Chester to Philadelphia. From this point the cattle were driven northeasterly through Trenton, Princeton and Newark to the Hudson river, and were ferried across to New York City. The drove referred to contained 119 cattle and three men were required to care for them.

Another route from the neighborhood of Lexington, Kentucky, extended to Charleston, South Carolina, a distance of 550 to 600 miles. The way led southeasterly through Cumberland Gap to the French Broad river. Then the river was followed as far as Ashville. The route then turned again southeasterly, crossing the South Carolina line at Saluda Mountain, and thence passed on to Charleston.

In those days driving to eastern seaboard cities from points as far west as Iowa, was by no means uncommon and cattle from Texas were among those on the road. A news item of 1855 mentions a drove of several hundred head from Texas passing through Indiana county, Pennsylvania, on the way to New York City. They had left Texas four months previous. During this same period large numbers of sheep were driven from Vermont to Virginia. A resident of Maryland, writing in 1854, tells of driving Spanish Merinos, mostly from Vermont, to Virginia, and that during the following five years he sold upward of 13,000 head. Large numbers of hogs were driven to market before the advent of railroads. As long ago as 1827 the keeper of a turnpike gate near the Cumberland river certified that 105,517 hogs had been driven through the gate on the way to the South Atlantic states.

Among the most important trails of the Mississippi river were those which led from Texas. One trail extended to pasture lands in the Kansas River valley on the line of one of the Pacific railroads. Near Abilene, Kansas, a station on this railroad, thousands of cattle were wintered annually in the late sixties and early seventies. One of the routes from the southwest to northern pastures which cattle were driven from 1865 to 1884 led from the Gulf coast of Texas northward passing west of San Antonio; thence to the Red river at Doan's Store, in Wilbarger, Texas. Here the trail branched, one part going northward to a point now included in Beaver county, Oklahoma, and thence west to the Colorado ranges. The other fork of the trail led northeasterly through Fort Sill reservation, now in Oklahoma; thence across Washita river at Anadarko, Oklahoma; thence northeasterly to the Canadian river, which was crossed, and the route extended through Fort Reno and Kingfisher and thence northward, following here the same general route as the present railroad through Caldwell and Wichita, to the Kansas river at Abilene. This route has been made famous of late through many interesting stories published of cattle trailed amid encounters with Indians and the extortion made by the roving bands, who demanded of the owner to pay liberally in order to secure permission to ford a river or pass through their territory. Failure to pay their price resulted in the stampeding and slaughter of the animals and death to the herders. Thrilling tales of hair-raising escapades in attempting to defeat the Indians in their vigils over the land, are laid along the course of this route and its two branches. The largest number of cattle trailed in one season from the southwest to northern pastures has been estimated at 416,000 head. This was in 1884, about the time of the opening of a through railroad line over that route, and from that year the number moving over the long trails rapidly diminished. The valley of a river was often a favorite and convenient course, although not always a direct one, over which to drive sheep from the native ranges to pasture along the railroads which reached eastern markets. One route from Oregon led up the valley of the Columbia and the Snake rivers, across the mountains of Idaho and down the valley of the Platte to shipping points in Nebraska.

And may I direct your attention at this time to one of the very first shipments of cattle by rail, which was from Kentucky to an eastern market in 1852, as told by the shipper. One week was consumed in driving the cattle, 100 in number, from the neighborhood of Lexington, Kentucky, to Cincinnati. Here they were loaded in merchandise box cars without any conveniences for feed, water or ventilation and shipped by rail to Cleveland and from there taken by steamboat to Buffalo. After a stay of several days at Buffalo, the animals were driven to Canandiagua, New York. From there they were hauled in immigrant cars to Albany, where they were unloaded and housed in the freight house of the railroad company. After spending two days in a feed yard near Albany the stock was taken by boat to New York City. The freight charges on these cattle from Cincinnati to Buffalo was at the rate of $120 per car, and the total expense from Kentucky to New York City was $14 per head.

Among the routes over which cattle were moved from Texas to eastern markets about 1870, three will serve as illustrations. One way led by coastwise steamer to New Orleans, where the animals were taken by river boats northward. At Cairo, Illinois, the railroad journey was begun, northward to Chicago, thence to the east. A second route from Texas was over a trail to a shipping point on Red river, where the cattle were forwarded by steamboats to Cairo and there shipped by rail northward. A third route followed the trails from Texas to feeding grounds along the railroads in Kansas and in regions north. From stations along these roads the animals were forwarded to eastern markets.

The advent of rail shipments of cattle began an era of terrible suffering for animals intended for market. Just when stock cars for transporting them came into use is not known. The date is lost in the dark days of the civil war or the period immediately following. There are no records extant of what railroad first adopted them. No man's name is written in history as having invented the stock car as a means of transporting animals to market. Necessity is regarded as the mother of invention, but no one stands sponsor for the stock car. The earliest reports on the equipment of railroads are now the property of a museum in Chicago and are in the handwriting of the early auditors. In 1866 the Dubuque & Sioux City road, now a part of the Illinois Central system, reported twenty stock cars in its equipment. The Sandusky, Mansfield & Newark the following year reported twenty cars also, also the Louisville, Cincinnati & Lexington seventy stock cars.

It is indisputable that in those pioneer days of live stock transportation shippers encountered great difficulties. The science of railroading was yet comparatively undeveloped and much of the country was in the same condition. The railroads were poor, very poor. Their building was hazardous and costly, their equipment meagre, limited, primitive and the service incompetent. Accommodations for both live stock and people were crude and uncomfortable. Freight rates were high, often more than double those of the present time and charged by carload rate instead of cents per pound. Cattle were wild and so were many of the men who handled them. Stock cars were equipped with hand brakes and old rubber springs that soon became hard. Trains were coupled with link and pins, the great amount of slack in freight trains causing a tremendous impact at every movement of the journey. Old wood-burning engines on the western roads, also equipped with link and pin couplings and hand brakes, slowly dragged along their trains, usually starting them with a jerk and stopping them with reverse steam that caused everything not nailed down to go up into a heap at one end of the car. The average schedule for trains, including stops, on the five leading western railroads in 1873 was ten miles an hour, with the highest time allowed twelve to fifteen. These trains on short, light iron rails, joined by old iron "rail chairs" spiked into wooden ties, forming a single-track road, with side switches at each station to permit the passing of trains. The roadbeds were rough and poorly balaasted, with excessive grades, wooden bridges and trestle work and everything in a poor state of repairs, while being in the hands of a receiver was a very common situation.

The high arbitrary carload rates then charged for the transportation of stock induced overloading as a measure of enonomy, which constantly resulted in many dead and crippled animals, while the remainder were generally more or less bruised from the overcrowding and continual jerking, jolting and swaying of heavy trains having link and pin couplings, hand brakes, rough track, heavy, uneven grades, numerous stops and startings, frequent switching with engines too light to do the work without bumping and jerking the daylight out of the poor animals when inside the cars. The result was that the weaker animals when knocked down were piled on by the others and trampled until either helpless or dead, or if they were able to rise were frequently so injured that they afterward died. In hot weather their suffering was intense. This added to the death toll and the loss to the shipper. It was therefore the invariable custom of the day for the shipper or attendant in charge to carry a lantern and an instrument called a "prod pole." It consisted of a long, heavy handle, nearly six feet long, with a sharp iron or steel spike extending from one end half an inch or more, which was sharpened to a point. These instruments of torture could be purchased at various places, where they were kept in stock. It was used to prod the other animals in the car aside while a steer that was down could be encouraged by the sharp point to take his place in the ranks. This prod was also equipped with a flat-headed screw driven into it near the business end and extending out a short space at right angles from the pole. When the "down" steer refused to respond to numerous jabs and such language as is generally employed on like occasions, the end of the pole with the attached screw was then engaged with the matted end of his tail, and by sundry twists and turns or pulls on the pole, a severe strain could be supplied to this sensitive organ. If the prostrate steer had life or strength enough in him to rise, this treatment would bring about the desired results, but he still continued in an indifferent attitude, he was generally considered in bad condition and a dead steer when the market was reached. Strong animals, evenly matched, might stand the journey without any of them being trampled or injured, beyond bruises received during loading and bumping against the sides of the car enroute, providing they were not kept too long under the strain of overloading, for the journey was always a crucial test of keeping on their feet. Under these conditions shippers went out with their prod poles and lanterns at almost every stop to keep the animals on their feet; then also hundreds of lanterns and poles were brought into the offices of commission men at the end of the journey. As late as 1873 unloading gangs at markets invariably carried ropes for the purpose of dragging the dead and crippled cattle from the cars. The principal buyers had men stationed regularly at the scales to watch for broken-ribbed cattle, which were frequently found, and $5.00 per head was deducted from the purchase price of every such steer, buyers sometimes refusing to take them at that price. Overloading was intensified by the high prices paid for dead animals, ie., those killed enroute to market, and sometimes they brought almost as much as the live ones. In 1869 hogs taken from the cars dead sold regularly at $4.50 to $5.00 per 100 pounds. The railroad pens at places where stock was unloaded or loaded were, as a rule, not sheltered and much of the time knee deep in mud and filth, making it impossible for the animals to lie down and rest and the conditions were frequently such that to force stock into them was positively inhuman.

Such in brief is the resume of the transportation of live stock previous to the introduction of the federal law requiring that live stock to market should be unloaded and given five hours of rest, with feed and water, after they have been on the cars continuously for twenty-eight hours. And with your indulgence I should like to give just a little of the history connected with securing the passage of that law, taken from an address from Dr. A. D. Melvin, chief of the Bureau of Animal Industry, of the Department of Agriculture, before a stockmen's meeting at Casper, Wyoming.

The statute originally known as the twenty-eight-hour law was enacted at the third session of the Forty-second Congress and became a law by the approval of President Grant on March 3d, 1873. It was later repealed and supplemented by the present law, effective June 29, 1906. The original statute has an interesting history. No less than four bills were introduced and five sessions of congress wrestled with the problem before it was passed. The measure seems to have originated with the New York Society for the Prevention of Cruelty to Animals. While the sentiment of congress appeared to be unanimous in favor of the humane treatment of animals in transit, there was some objection to the measure on practical grounds, and there was strong opposition on the legal and political question of constitutionality. In the debate on the latter phase of the subject, some of the most eminent men in congress at that period took part.

The first bill in the series was introduced by Representative John T. Wilson of Ohio, May 16, 1870, during the second session of the Forty-first Congress. Mr. Wilson was also the father of the bill which finally became a law. Other bills were introduced by Senator Conklin of New York and Senator Henry Wilson of Massachusetts. The necessity of such a law and the conditions leading up to the agitation of the subject, I have just described. Mr. Wilson went on to say that it had been shown to the satisfaction of the committee on agriculture that cattle shipped from the producing regions of the west to the eastern markets were confined in the cars from four to five days without food and water.

In the senate it was stated by Senator Simon Cameron of Pennsylvania that the records kept by Brigham Young showed that an ox weighing 1,500 pounds, shipped from Utah, would lose on an average of 230 pounds by the time it reached Chicago. Such were the arguments used by the members who introduced and advocated the bills.

Aside from the question of constitutionality, several objections of a practical nature were brought forward in the course of the various debates. Senator Thurman of Ohio expressed the belief that as it was to the interest of the trade to ship cattle in improved cars, such cars should be provided in time without legislation, and that for the present it would be a hardship to throw out of use the old cars in which millions of dollars were invested. Others asserted that the law would cause great expense to the railroads and the shippers and that the matter was one which should be left to their control, as the shippers were mostly interested in reducing shrinkage and preventing loss on their animals. This sounds very much like the fallacious argument that is still used sometimes against the government work for the control of contagious diseases—that the stock owners are financially concerned in getting rid of disease and the matter should therefore be left to them.

Another and sounder agrument, which is applicable in some respects today, was stated by Representative Archer of Maryland, in these words: "Any member of this house who has ever seen any of the cattle yards of this country can imagine what kind of rest cattle would thus obtain and what humanity there would be in placing them in any of these miserable, muddy places. These cattle, after having been detained in these miserable corals, and after obtaining no rest whatever, will have to go through a loading again, which is always one of the most painful operations for them in their whole passage."

A few members thought they detected a "nigger in the wood-pile," in the shape of a patent stock-car which was to be promoted by the law. But the great question on which the bill was contested was that of constitutionality.

Every Secretary of Agriculture, beginning with Secretary Rusk, has taken steps to secure the enforcement of this law. Circulars calling attention to the law have been issued and distributed among the railroad companies, placards have been posted, evidence of violations have been collected and prosecutions have been instituted. The humane societies have also collected evidence and reported violations.

Let me call your attention for just a moment to the progress made in the enforcement of this law. These figures were taken from the report of the solicitor of the department for the fiscal year ending June 30, 1909. The efficacy of a law designed to correct public evils depends almost entirely upon the vigor of its enforcement. By this token the twenty-eight hour law is a conspicuous success, as will be demontrated by a simple comparison of the number of cases reported for prosecution to the attorney general during the preceding fiscal year and the one just closed, for it is by the decrease in the number of violations of the law that its success in the accomplishment of the purposes for which it was designed must be tested. During the former year 685 cases were reported for prosecution, while during the latter, with an equal degree of activity and vigilance in the ascertainment of violations, only 208 cases were reported, a decrease of 477 cases, or 70 per cent. In the brief period of three years from the inception of active and determined preparation by the department to compel compliance with this act by proceedings in the courts, violations reported for prosecution reached the startling figure of 685 in a single year and decreased to 208 in the succeeding year.

Interesting points have arisen in some of the cases which have come before the courts. In one case, where an attempt was made to collect a penalty of $100 for each animal in the shipment, the court held that this could not be done, as the confinement of the entire number of animals constituted a single offense.

Today the transportation of live stock has become such a scientific study that the loss is reduced to a minimum. Special cars, the result of years of experience and large expenditures of money, are now used by all roads. Some of the roads own the cars they operate, others lease them from companies that provide cars for that purpose. Probably the highest standard of perfection in present day stock cars has been reached by the Street Western Stable-Car Line, a concern which maintains annually, at its plant in Chicago, an equipment of over 8,000 cars. This particular type of car was patented and put on the market in 1885. It has been improved from time to time, as experience dictated changes, and at present is equipped with a style truck which gives the car while enroute a swing motion that permits stock to ride with the least friction and discomfort.

In former days live stock was given no consideration over other kinds of freight, whereas, today, stock trains on some roads are given preference over everything but passenger trains at meeting points. There is practically no limit to the speed of the stock train of today, while the regular schedules range from eighteen miles an hour on the branch lines to twenty-five miles on the main lines. In fact the main lines of the western roads now bring stock from points west of the Missouri river into the Chicago market in side of twenty-eight hours.

It would not be doing the subject justice if some mention was not made at this time of the transportation of live poultry, which has grown to such enormous proportions. This business is practically in the hands of one company, which provides the cars for the United States. The Live Poultry Transportation Company of Chicago operates 500 cars built especially for this purpose. There is a water tank in the top of each car, which holds 327 gallons, with hose attached that will reach all compartments, and a granary eight feet square and twenty-one inches deep for carrying feed. Each car contains 128 coops. The large stateroom in the center is used for the shipper to put in a trunk and a cot, for he "goes to bed with the chickens and gets up with them." Allowing three dozen fowls for each coop, the car will carry with small shrinkage 4,608 fowls. The volume of live poultry being shipped to Chicago and New York is increasing. This is primarily due to the segregating of the Jews in these two cities and the demand of these people for fowls to be "koshered." At the present time these two cities are the largest live poultry markets in the world.

By way of comparison with present conditions, let me cite one instance of the manner in which turkeys were marketed in early days. In October of 1856, Captain Stedman, now an employe of the Bureau of Animal Industry, recalls having met on a road south and east of Indianapolis, Indiana, a man and two boys driving a flock of 3,000 turkeys to the Cincinnati market. This method was known to have been employed in the New England states in pioneer days, when buyers collected turkeys in neighborhoods 100 miles from market and drove them in overland. It is reported that they caused no more trouble to drive, after the second day enroute, than sheep or hogs did. However, an attempt to repeat such an undertaking in this day of scorching automobiles would be attended with disastrous results.

To attempt to give a review of the growth of the live stock markets of the United States in conjunction with the history of transportation would involve too much time; however, Chicago has reached the point where it is now the largest in the world. Nearly two-thirds, ie., 64 per cent of the population of the United States is east of Chicago, while 70 per cent of the farm animals are west of Chicago. All of the great east and west transportation lines have terminals there, as have also the southern and lake lines. It is moreover in the center of the most fertile, populous and wealthy agricultural region on earth and is the most accessible of any large city to the great manufacturing sections of the United States, which includes the areas north of the Potomac and Ohio and east of the Mississippi rivers. The city of Chicago alone consumes over four million pounds of meat per year, equal to 800,000 head of cattle annually. The stock yards now have a daily capacity of 75,000 cattle, 300,000 hogs, 125,000 sheep and 6,000 horses.

DISCUSSION.

Mr. Wallace: I want to say that his speaking of the early driving of cattle reminded me of old times, because I happened to live on a road over which a great many of these cattle went. I can remember the long-horned steers and the big lumps on their jaws, which I now recognize as actinomycosis. Another thing which was amusing was that about half an hour before sundown the hogs all commenced to squeal.

Mr. Hood: As a boy I lived between Westchester and Philadelphia, and a few of those droves must have come through after war times. We were within eight or ten miles of the Philadelphia stockyards, and they used to pasture the stock in our neighborhood; and I still remember some of those big roan steers that came from Kentucky. I also saw one or two droves of turkeys come through.

Mr. Smith: There is another question that is a live one to stockshippers. There has been a great improvement in the treatment of caretakers of stock in my day, and I am still a young man; but there is a chance for great improvement. I have had some experience this summer, and I believe that every shipper has the same, and it is one of the things that ought to be corrected. When a caretaker comes to a division station, unless he has been over the road a good many times, he naturally inquires of the trainmen where he shall go to get the next way-car. The brakeman on the train on the division he is riding on doesn't know a thing about it, nor does the conductor. They tell him where to go to inquire. He goes to the yardmaster's office, and is told that his way-car is "right over there, yonder—just over the other side; go over and get in." I am just telling my experiences occasionally for the last thirty years. My last experience was one of leading about ten men to find that car, and I'll bet we traveled three miles. We got to it twice, but it was when it was in motion; it was just being pulled back and forth. A neighbor of mine who was trying to keep up with me (he wasn't any older than I, but he wasn't as good a runner) stubbed his toe, fell down and cut a great gash in his face. Other things that this association has taken hold of have been remedied, and I believe if you people on the other roads have the same experience that we have on the Burlington, if it were talked up it could be remedied. The railroad companies should fix a place where the caretaker of stock could get aboard the car and not have to run all over the yards in the night.

President Sykes: I think Mr. Smith's suggestion is all right. While the boys on the Northwestern don't have much difficulty in that respect, I know from what some of them on the other lines tell me that they are bothered in getting to their way-cars. There is no system at all about the roads.

Mr. Cold: Give us a law compelling the stock trains to stop in front of the depot to let the stock men on. Mr. Smith's story is exactly the experience that we went through—I think it was three years ago—on the Great Western. Since then we have had no trouble at all. If there is any bunch of us, we sit in the depot or the yardmaster's office until the train comes along, but prior to that we had an awful time.

President Sykes: We will now listen to an address by Mr. R. M. Gunn, one of our own members. He is a big hog raiser and feeder from Black Hawk county, and I am sure can give us some information along the line of hog production and feeding.

Mr. Gunn: I am old in this association, because I joined it in its beginning; but my experience as a hog raiser does not extend back over fourteen years—that is, my recent work. Of course, I had worked with hogs ever since I was big enough to chase one, and that is about thirty-five years; but my only work with any number of them has been only about twelve or fourteen years.

GROWING AND FEEDING HOGS.

R. M. GUNN, BLACK HAWK COUNTY.

With the eight-cent hog staring us in the face most of the summer and fall, and likely to stay with us for some time to come, we naturally begin to talk about him, and it makes the subject of hog feeding quite an important one.

Hogs are raised under many conditions in many parts of the world, from the famous parlor hog of our ancestors to the piney woods hog of the south. But we will content ourselves today with simply the Iowa hog, I mean the four-footed one, and how we shall raise him.

As meat producers, our aim should be to strive to produce meat as cheaply as possible, not only for the good of our own pocketbook, but for the good of the ultimate consumer we hear so much about these days. Every farmer has his preference for a certain type of hog which he has reasons to believe will the best fulfill his conditions. So the type of hog will not concern us further than to say that we all want the hog that will carry the most pounds of valuable meat, putting it on in the most economical manner, and be able to keep this up from one generation to another. While this combination is not impossible in the market hog, yet it will require constant attention in selection and mating.

Breeding hogs can be kept in a more suitable condition if they are kept in a lot by themselves. I do not mind, however, having them with the stock cattle, providing they can have a part of the shed fenced off for sleeping quarters, where they should have a good bed, with plenty of fresh air. Have the hogs' sleeping quarters on the ground; a well bedded cement floor is very good; a plank floor laid on the ground is the best floor I know. While range exercise and pure air are essentials, the kind of feed is quite as important. We are developing the future herd, and we must not expect to make bricks without straw, which we will force them to do if we feed on corn alone. While corn is quite an essential and should form the greater part of the sows' winter ration, it must be supplemented with some kind of protein and bone forming material. I know of no better feed for this purpose than good oat meal. There is something in oats for the development of the unborn farm animals that we do not find in any other feed. For several years, until this year, oats have been out of the question, having been either too high priced or so low in quality that we have been compelled to look around for other feeds. Second cut clover hay will be eaten readily by brood sows, or have their sleeping quarters in connection with a good clover meadow, and some winters they will be able to range out on it the most of the time. One open winter my hogs had no other source of protein feed than this kind of pasture and I never had sows do any better nor have any stronger pigs. The use of tankage has been quite prominent in our feeding problem. I usually feed it in a self-feeder, mixed with ashes or charcoal and enough salt put in to keep them from eating too much of it. Sometimes oil meal is used in the same way—the coarser kind. As to cotton seed meal, I can say nothing about it from my own experience. I do not think, however, that it is a good feed for brood sows; at least, we know that a drug causing abortion is made from the cotton plant. My hogs never have to depend on myself or a man for water; they can go to their tank in winter or the creek in summer any time they want to.

A week or so before farrowing time our sows are placed in single pens in our hog house and given a slop ration not much different in quality or analysis from that which they received outside. We use oil meal in place of the tankage to keep their systems in better condition, and it is much pleasanter to handle, and as we do not care to change her feed again, her pigs will more readily take to eating the slop if the tankage is left out. Mix ground oats and middlings, equal parts, with a fourth as much oil meal and water, to make slop. Feed her gradually until she gets used to it. However, after she farrows, she should have nothing but water for twenty-four hours, then give her a light slop, gradually increasing it for about a week or ten days, when she will be on feed again. If she is put on feed too soon she is likely to produce more milk than the pigs will take at this time, and have a fevered udder, which will produce scours in the pigs, and later a caked udder, which is so painful that she will not allow the pigs to suckle.

After the pigs are about ten days old, we put about four or five sows together with their pigs. This is done to make room for more sows in the single pens, and also to get the pigs where they will be obliged to take more exercise in order to avoid the thumps. From here they are allowed to get acquainted with the larger world and range out with their mothers on pasture in fine weather. Here is where quite a feed bill can be saved; if you have a good clover or alfalfa pasture sows will readily cut down on the amount of slop required. After the pigs are three weeks old they must be gotten onto feed as soon as possible. Nothing is better for this than a little skimmed milk placed in a low trough behind a creep in part of the pen; a little shelled corn should be placed there, too. Don't let any feed stay in this small trough until it gets sour; shove the trough out under the creep and let the mother clean it up. It will not be long until the pigs will clean up considerable slop, mixed in with their milk, and they will also be eating with their mothers. From this on it will only be a matter of proper feeding. Don't overfeed. At about six weeks, four or five of these pens are put together and placed in a larger pasture of clover or alfalfa, with a part fenced off exclusively for the pigs. Here we keep up the slop ration for the pigs, but diminish it for the sows, to begin the drying off process, which will take a couple of weeks, when the sows may be turned into the feed lot by themselves or with cattle. We try to keep the sows in as fleshy condition as possible during all the time they are suckling their pigs, and they are pretty well on the road to Chicago by the time they are dry. The pigs are kept in the pasture until they weigh all the way from seventy to one hundred pounds. Not fat pigs, either. If we wanted fat pigs, we would not have gone to all this trouble. They are pigs with a good frame, ready to follow cattle and grow and fatten, a good many of them going to Chicago in October weighing two hundred to two hundred and a quarter. In the pasture where the pigs are turned they usually have things their way. They have young blue grass, white clover and rape, a creek of pure water, which they can drink from or lie in at any time; later on they have a chance to husk a field of corn, and, hogs as they are, I never knew them to kick on the price yet.

I know a generation or two of pigs can be raised more cheaply and easily than my way of doing it, and many follow the plan of letting the sows and pigs follow the cattle as soon as the pigs are able, but we got no growth, as the pigs got too fat, and this danger has to be looked out for when turning them into the corn field. Do not allow them to have too much at a time and keep the old sows out of the field, as they know how to break the corn down.

DISCUSSION.

Q. I would like to ask Mr. Gunn at what price he can afford to put hogs raised that way on the market?

Mr. Gunn. I believe I can put them on at 3½ cents, figuring oil meal at about $30 a ton and oats at 35 or forty cents a bushel; that is, giving them lots of grass.

Q. At what weights do you expect to put them on the market?

Mr. Gunn: Those that come in the fall I figure will weigh about 225 to 250; the latter is the limit. I do not think it profitable to keep a hog after it weighs 250.

Q. Do you recommend raising two litters a year or only one, and do you recommend keeping the old sows over or marketing them?

Mr. Gunn: My experience with the old sows has not been very good. If you grow a young sow that way and give her a good frame, she is more lively than an old one. I have kept good old sows that had raised two litters the first year, and they were regular old sluggards; they would lie down on a pig and let it squeal under them until it was dead. I have better luck with young sows.

President Sykes: About how many pigs do you figure on raising each year?

Mr. Gunn: We raise all we can. We usually aim to have about 100 to 125 sows, and we raise all the way from 600 to 900. I have raised 1,000, but we don't figure on that many all the time.

Q. What is your objection to having them lay on the cement floor?

Mr. Gunn: I don't object to that if it is well bedded; but what I object to is the hog-house with the plank floor about a foot from the ground; the winter winds blow right under it and the hogs pile up.

Q. Did you ever try a dirt floor with woven wire? Don't you consider that the ideal floor?

Mr. Gunn: That is an ideal floor.

Q. How do you keep the strong pigs from robbing the weaker ones?

Mr. Gunn: You have that problem to contend with all the time. The only way to break that up is to feed the sow enough so that she has all the milk they want, and then they won't bother the others. I keep the pigs with their own mother for about ten days. You should not keep them much longer than that, because the pigs will be too fat if the sow is heavily on feed. If I were doing it myself on a smaller scale, I would probably do many things different, but in order to use hired help you have to have a machine system.

Q. How large a corn field do you turn them into—how long do they run in the corn?

Mr. Gunn: Well, this fall I had a 12-acre corn field that was intended for the hogs. It was early corn, and I turned them in about the first of September and let them clean it up thoroughly, and they made a good job. The field is plowed and ready for corn next year. Maybe I would give them another twelve or fourteen acres to five or six hundred pigs.

Q. Which hundred can you make the cheapest, the first, second or third hundred?

Mr. Gunn: You can make the hog grow 100 pounds cheaper than 200.

Q. About how many pigs do you calculate to average?

Mr. Gunn: I don't figure at the end of the year averaging more than six pigs; that is a pretty good average for every sow.

Mr. Downing: How do you prepare your fat hogs for the market to keep down the shrinkage while they are in transit?

Mr. Gunn: I don't prepare them. My hogs go out of the feed lot to market. I can't make much preparation because I am seven miles from market. I haul or drive them to market, and getting them there is quite a problem if you have two or three loads. I can hardly prepare either my cattle or hogs for shipment.

Mr. Downing: How much corn do you put in the car?

Mr. Gunn: I put seven or eight bushels of corn in the car.

Mr. Downing: How far are you from market?

Mr. Gunn: I am thirty miles north of Belle Plaine, and that is 280 miles from Chicago.

Mr. Downing: How much shrinkage do you generally have per car?

Mr. Gunn: Well, that depends some on who handles them at the other end, and it depends on where you figure from. If I figure from the time I load them at home until I get to Chicago, I may have a thousand pounds; but I have weighed them in Buckingham and in Chicago and had no shrinkage. I weighed them empty. We feed them probably a bushel to the car after they get to Chicago.

Q. Do you think it would be better if you would put more corn in the car?

Mr. Gunn: No, I think not; it is just what they clean up; sometimes it won't be all cleaned up.

Q. Why do you make the statement that it won't pay to put the third hundred pounds on hogs? Why should the cost of the third hundred be so much more expensive?

Mr. Gunn: You have that added hog to feed. You have to keep living what you have already, and then have to make him gain some more. You might just as well feed another 200-pound hog while you are putting on that hundred.

A Member: I see that Mr. Gunn has had quite a time explaining why it would not be profitable to feed the 200-pound hog to 300. Experiment stations in all the states have demonstrated to the satisfaction of every man who makes a study of it, that it costs more to put the hundred pounds on a hog after it weighs 200 than it does to put the hundred pounds on before he is in marketable condition. They are in a position to know those things, because they have weighed everything that a hog drinks and eats, and it is all charged up; and when they tell us that it is not profitable to feed a hog to 300 pounds when he is in marketable condition at 200, I think we ought to be satisfied.

Mr. Gunn: How does it come that our experiment station has proven that they can feed a hog more profitably on corn alone up to 200 pounds than in any other way? I can't understand it and I would like to have it explained.

Mr. Smith: I think you are mistaken in the report. I was reading the bulletin yesterday. It stated that corn with pasture—and when pasture was gone, supplemented with tankage—made cheaper pork than ground corn or other things that are used You will notice in that bulletin it states that they have protein to balance the ration.

H. C. Wallace: I think almost without exception the experiments which have been carefully conducted show that corn alone costs more to produce pork than corn with tankage or bran or almost any other protein food in reasonable quantities. But of course many of these experiments are misleading in this respect: that the price of this feed is constantly changing, and I think the only safe way for a man to get on the right basis there is to figure the number of pounds of protein that he should feed, and then it is simply a question of where he can buy that cheapest. The best work done with hogs by any station in the United States has been done by Illinois. Professor Dietrich there issued a bulletin about three months ago, in which he summarized the reports of all the experiments conducted there over a period of a number of years, and he put his results in the form of a table, in which he has worked out the number of pounds of carbohydrates and the number of pounds of protein for hogs starting with five months, then seven, and so on up. I regard it as a most valuable contribution to the hog-feeding question, and it would pay every man to secure a copy of that bulletin and study it. He also went into the question of the part water played in making economical gains, and has thrown entirely new light on that question.

Mr. Sherman: I would like to have a call of hands shown here on hogs marketed at 225 pounds or over, or under 225 pounds.

Mr. Muray: That is a broad question, for the simple reason that when grains are high you find by the receipts at Chicago that they have twice the number of hogs, but they are light. When grain is cheap, you will find that the farmers all over get their hogs heavier. As a result the hogs from our country for the last eighteen months have gone in around 200 pounds or less.

Mr. Doran: I think Mr. Sherman's idea is to get men's judgment, not what they do this year or ever did before. Hogs are high and scarce, and you have to keep them longer in order to have more hogs to sell; but if you ask for their judgment of what age to sell would be the most profitable, I think you would get more intelligent judgment.

Mr. Sherman: I didn't mean the judgment; I meant the policy that you follow out in your marketing. Make the question like this: When feeding hogs direct, do you market them at 225 or under?

(A show of hands indicated eighteen marketing at 225 pounds or under and twenty-eight at over 225.)

Mr. Smith: I couldn't vote on that. The size of a hog has nothing to do with the time of selling. When the hog is ready for market and the price is right and the corn is hard to get, as it has been the last two years, they go to market regardless of size.

President Sykes: I think that a great many act on the line that Mr. Smith has suggested.

Q. I would like to ask what preparation Mr. Gunn uses for the purpose of getting rid of worms in his hogs?

Mr. Gunn: I have run the whole gauntlet. I use nothing now. I tried all kinds of stock foods. The last one I tried the agent sold me $15 worth. I fed it as directed; I had six or seven hundred hogs, and I watched pretty closely to see if they were wormy, and I found two worms. So the next time the agent came around I told him that $7.50 apiece for worms was too high-priced, and I wouldn't buy any more.

I am situated a little bit differently from a good many. I have a creek running through my field that is sandy. There are places in it where the hogs can root into the bank and get mud to wallow in. Once in a while it rises and washes down some fresh sand. I have been out after a freshet when the hogs would be out eating that sand just as a boy does sugar. I have also seen them eat stones as big as the point of my finger. Worms aren't going to live in their intestines. So I feel as though I am not competent to answer that question.

Q. Have you any special breed of hogs that you favor?

Mr. Gunn: I will plead ignorance of that. I never have had but one breed on the place since I have been in the business. They happen to be Duroc Jerseys. I suppose if they had been Poland China I would have stayed by them. I did a foolish little thing once, yet it made me some money. I crossed it with Yorkshire. The result was that I was able to sell sixteen carloads of hogs from them. But on some of them I made two crosses, and I shouldn't have done that. My herd now is practically Duroc Jersey, and I expect to keep them.

President Sykes: Mr. Hood touched on a question that might be of interest to some: that of making a floor out of dirt and woven wire fencing. It might be well for him to explain here how that is done.

Mr. Hood: I know nothing about this more than everybody else knows who has read the papers, and of course that means everybody here. The idea is simply to take some fine woven wire and put it in your hog floor. I have always insisted that the proper floor was the earth floor, and I was bothered with the hogs rooting holes in it, and finally we hit on the idea of using woven wire. Get a reasonable fine mesh, two inches square, perhaps, with enough dirt so that the wire is not in the way of bedding and cleaning. Occasionally a self-willed sow will root into that, but as a rule they don't bother much.

Q. I would like to ask if any one has ever tried putting a rough cement floor down and then covering it with a little dirt, in the same way that the woven wire is covered? The old sow could never root that up. The dirt would stick to the cement floor and give her warmth.

Mr. Gunn: I would think that would be a dusty floor pretty soon. I will simply state that in my hog house I have a cement floor, but in the small pens where my pigs are born I lay common boards over half or two-thirds of the space, and when the season is over I take them up and put them overhead, and there they are till I want them the next spring again. I lay strips under them until they are about an inch or so from the cement floor. That makes a warm place to put the bedding and keeps them off the cement floor.

Q. How near the same time do you aim to have all your pigs come?

Mr. Gunn: You will find where you have a great many sows that it doesn't seem to make much difference how you breed them; about every three weeks a new batch of pigs comes. If you watch and keep them by themselves, you will get pigs of nearly the same age. You can probably get one hundred to one hundred and fifty pigs that won't vary five days in their age.

Q. Then you keep those pigs by themselves as you market them?

Mr. Gunn: No; they will all get together finally in the fall.

Q. How do you handle the slop in large quantities, in barrels or tank-wagons?

Mr. Gunn: I use barrels. A tank-wagon is apt to get neglected, and I use barrels on a low truck—one, two or three, according to how much slop I have to use. Sometimes it will take ten barrels to do the feeding before I am through, but of course I can't carry but three on my wagon at a time. It is so much easier to rinse out a barrel and keep it sweet than it is a tank-wagon. I never used a tank-wagon, but I can readily see how it would get sour on you.

DISCUSSION ON CATTLE FEEDING.

The President: Mr. Chas. Escher, Jr., who is a prominent cattle feeder and possibly has as great a reputation in that line as any man in the state, is on the program for an address on "Cattle Feeding," but he is unable to be here and so informed Mr. Wallace. So we will have a general discussion on that subject for a little while. I will call on Mr. Parsons of Rockwell to start this discussion.

Mr. Parsons: I have not fed any cattle for about three years, but I spent forty-one years of my life in active farming and fed more or less cattle the greater part of that time. You will readily see that my experience in that line belongs to the age that has gone by. I was an early settler in the northern part of the state, and we had free pasture and consequently fed largely on the old system; but the last few years I did feed I began to investigate the value of using feed stuffs with my cattle. The cost of freight, from the fact that I had to ship it in local lots, made it seem to be unprofitable. I then got a grinder and undertook to grind my corn, and tried to save some feed in that way; but after trying for two years along that line I decided that the cheapest beef that I could produce was by feeding first on fodder (I was a winter feeder as a rule), and then feed snap corn later, and when the pasture entirely failed and the corn became old, feed in the middle of the day all of the clear clover hay that they would eat up in about an hour. I aimed to have them always eat all the clover hay out of the rack. The rest of the time I fed them on wild hay and good straw. The last two or three years that I fed I undertook to ship in alfalfa, but I couldn't see that I got any better results from that than from my clover hay. The last year that I fed, when I was on my way to Chicago with some other stock men, they said they were feeding molasses. After I had fed the snap corn and gone to the ear corn, their mouths got tender and I had to feed the shelled corn. The last year I shipped in some molasses, and I believe if I had continued to feed I would have started in as I did, fed the clover hay at noon (it seemed to balance up the corn), and then bought cheap molasses and sprinkled on the shelled corn to finish my cattle.

Mr. Murray: I generally feed from 100 to 200 head each year, and I am a late feeder. I feed as much snap corn as possible—start them on it and keep them on it just as long as I can. The more snap corn I use the better I like it. I raise from 6,000 to 9,000 bushels myself, and I put it on the ground and leave it out for the young ones. Of course I have a crib with some in for stormy or bad weather, but my experience is that corn on the ground is much better for the cattle than corn in the crib. Mr. Parsons spoke about his cattle's mouths getting sore. That will never happen if he has his corn out in the open where it is soft. Enough moisture falls during the winter so that the snap corn is in good shape always for cattle, but if he has it in the crib, as I have, and once in a while pulls out a load, he will see the difference. After they have been fed snap corn for sixty or seventy days, commence giving one feed of shelled corn and one feed of snap, with a little oil meal up to about three pounds per head per day—with shock corn fed once a day and clover and timothy hay for roughage. The steers that I feed have always made good gains and made some money. I never market any cattle in the winter time. I always commence to feed late.

Mr. Wallace: You leave considerable husk on it? You don't thin-snap it?

Mr. Murray: Yes; I leave the husk on, but no shanks.

Mr. Smith: I would like to ask Mr. Murray, with an advance on cattle of 4½ cents a pound, at what price must a 1200-pound steer be sold to bring a reasonable profit?

Mr. Murray: I never made any figures. I put 120 head into the feed lot last Sunday morning, being forced to on account of the storm. I did not expect to put them in until the first of January. When I was a young man, if corn was 25 cents a bushel, I wanted $1 a hundred; and when it is worth 50 cents you want $2 a hundred. I don't know whether that will answer the question or not. I have always figured with my cattle that the hog feed would pay for the interest on the money in the rough feed.

Mr. Downing: I would like to ask Mr. Murray how he finishes his cattle just before he ships them to market—whether he feeds them on corn up to the last hour, or a couple of days before he ships he cuts out the corn entirely and feeds them on hay and oats, or something of that sort?

Mr. Murray: I have tried all ways. I have fed whole sheaf and threshed oats, and I have fed them on corn, but I don't believe there is anything that will beat snap corn. I don't like shelled corn for the last feed. I only have to drive my cattle a mile to the shipping station.

Mr. Downing: How many pounds per day can you make on that kind of arrangement?

Mr. Murray: I am getting into deep water here. Some of you know Fred Reiser, who worked for me by the month one time. I had a two-year-old steer and a three-year-old steer and a cow that weighed the same notch, and we tried to keep track of those three head of cattle during the winter feeding. We happened to weigh them Sunday morning right after breakfast, before we fed, and they all weighed just the same. We ran them in twenty-eight days later and they still weighed the same, having gained 100 pounds in four weeks. In four weeks more (it was so remarkable that I never forgot it) they weighed in the same notch again, 100 pounds gain. Four weeks after that we put those three animals on the scales all about the same time in the morning. The three-year-old had gained eighty pounds, and the cow and two-year-old steer had fallen down 100 pounds each. That seems remarkable, but a man can do that with a drove. I should say two and a half to three pounds a day was a good gain on a large drove of 200 cattle, but I have put on three and a half pounds a day for 100 days on one load of cattle. Those cattle were fed from the first of April through May and June and were sold before I fed them an ear of corn. That was the year when corn was so high. Those cattle averaged in ninety odd days 350 pounds more than they did when they were fed in the yard.

Mr. Downing: I would like to ask Mr. Murray, on the line of feeding that he has laid out, what his shrinkage is where he ships to the Chicago market?

Mr. Murray: The shrinkage depends on the day and how bad they want the cattle. I have gone in there when there were 14,000 cattle in the yards, and they gobbled up the cattle so fast that they hardly wanted to let them drink. There are other times, when there are 35,000 or 40,000 cattle there, that they will ride up and down on their horses and act as if they wanted to see how much they would shrink before they bid on them.

Uncle Henry told us we thought we were getting rich, and that that was equivalent in his mind to our being so. Now we are told that we can grow pork at 3½ cents a pound, and we can grow fattened beef at 2 cents a pound. We can sell our hogs for 8 cents, or nearly so, and our beef for 8 or 9 cents. I begin to think Uncle Henry will have to revise his statement a little. We not only think we are getting rich, but we really are.

Mr. Claus: I want to endorse the statement made by Mr. Murray with reference to snap corn, and also corn fodder. I have fed snap corn and corn fodder, and found that it is about the best all-around feed that we can get. I believe that we as feeders are making a mistake by leaving our stock in the field and feeding them just the bare corn. Last winter I fed four loads of cattle on practically nothing but corn fodder and snap corn, and I have had them make a gain of over 100 pounds per month. I mixed with that feed about two pounds of cottonseed meal. They have done better on this than cattle I have fed on shock corn and hay, and I believe that we could save ourselves a little by cutting up our corn and feeding more fodder, as well as snapping the corn for the cattle.

Mr. Downing: I would like to ask the gentleman if in handling the corn in that way—cutting it up—the labor would not make a difference.

Mr. Claus: I think we can put the corn in the shock about as cheap if not cheaper than we can husk it; and as we have to employ help anyhow to do the feeding, it is but little more work to haul in the fodder and feed it to the cattle than it is to haul in hay or any other kind of feed. And besides, we can shorten up the long siege of corn husking considerably by cutting up the corn.

President Sykes: It occurs to me that some might be interested in the silo proposition. You know we had a very able feeder deliver an interesting address on silos and ensilage a year ago, and now we have a man with us who has been trying the silo proposition from a feeding standpoint. There may be others that I am not familiar with, but I know Mr. Brockway has had some practical experience with the silo and ensilage, and I am going to ask him to give us a little review of it at this time.

Mr. Brockway: I am not ready to talk on this subject yet, because I am just in the process of finding out. A year from now I hope I will be able to tell you a great deal more than at present. Last year I built one silo, 24 feet in diameter and 30 feet high. I got started late in the season, and only got it about two-thirds full. I used that feed in the muddy period along about the last of February. This year I raised that silo 12 feet and built another one just like it. They are both practically full. I expect to open those silos some time the first of the year and use them on my stock. There is one thing that I can tell you about, and that is the expense of operating. In these two silos were put about 110 acres of corn at 55 to 60 cents a bushel. I can't get my corn husked for less than 5 cents a bushel. I figured the total cost of putting that in the crib and the total expense of putting that corn into the silo. It cost me 80 cents more per acre to put it in the silo than if I had left the stalks in the field and husked the corn and put it into the crip. It seems to me there is no business in the world that would stand the loss of this corn going to waste. In a year like this, when corn is spoiling in the fields, there is nothing that I am so thankful for as that I have that 110 acres of corn in the silo where it is just like canned corn in the shell. It will make about $3.50 to $4 an acre—5 cents a bushel for husking, 55 bushels to the acre, and 80 cents an acre on top of that. There is a question of how much that corn went to the acre. They tell us that good corn will make ten tons of silage to the acre; I have my doubts about that. I think about seven or eight will come nearer to it.

Mr. Gunn: Mr. Ames and myself filled two silos, and they averaged 65 cents a ton for filling.

Mr. Brockway: I am very sure it will cost a man more the first year than ever afterwards. I can see now where I can put it up a good deal cheaper another year than I did this.

I would like to say in regard to this snap corn—I used to use it a good deal—that I find running it through an ensilage cutter improves it a great deal. Just at present I am running about 100 bushels of snap corn with about 1,000 pounds of alfalfa hay.

Mr. Murray: It is not profitable to feed snap corn in the ears where there are not plenty of hogs to follow, because they will waste it.

Mr. Gunn: I would like to ask Mr. Murray, if he was buying snap corn, how many more pounds would he take to the bushel than of ear corn?

Mr. Murray: Five pounds more; there is five pounds difference between the ear corn and the snap corn.

President Sykes: Since hearing Humphrey Jones' lecture last winter, I am thoroughly convinced that the time is not far distant when we must adopt the silo, and, as Mr. Brockway has said, can up some of this corn, so that we will not be caught with it out in the snowbanks and sleet and mud, as it is at the present time.

The meeting thereupon adjourned.

PART V.

PROCEEDINGS

STATE AGRICULTURAL CONVENTION.

December 8, 1909.

Convention was called to order at 9:30 a. m. by the president of the State Board of Agriculture.

Prayer was offered by Rev. John W. Day of Des Moines.

The president appointed the following committees:

Committee on Credentials: John Ledgerwood of Decatur county, J. W. Coverdale of Clinton county, and S. L. Watt of Sac county.

Committee on Resolutions: T. E. Grissel of Guthrie county, T. W. Purcell of Franklin county, and B. F. Felt, Jr., of Clay county.

Vice-President Brown was called to the chair and President Cameron made the following address:

PRESIDENT'S ADDRESS.

The Iowa State Fair and Exposition is fast coming to the front as what its supporters have always contended it is—one of the greatest educational institutions of the state. Here the practical demonstrations of the scientific education of agriculture in all its forms are exhibited. It is here the father, mother, son and daughter who are unable to attend the agricultural and domestic science schools can attend this annual gathering of all the resources of the state and go home imbued with the desire to become more efficient in their work; they not only see but have opportunity to talk with exhibitors in all departments, thereby receiving information they could not have obtained had they not attended the fair. The reason I make the assertion that the farmers of the state are anxious for information is the yearly increase in the number of them who used to attend the fair a day or two, but who now bring their families and camp, or procure rooms and remain the entire week. The number of campers has more than doubled the last few years. The number of people who passed through the gates this year was more than for any year in the history of the fair, with Thursday and Friday rainy days. People are bound to come to the fair if you have these things there that they are interested in, and the more interest there is for them the longer they will stay. It has been the policy of the Iowa State Fair and Exposition to try and have a well balanced fair, and in that way interest all the people who attend. It is with pride I speak of it. Iowa has the reputation of having the best balanced of any of the state fairs; that is where its success has been—catering to all the people.

This year we made permanent improvements on the grounds of over one hundred and fifty thousand dollars. One hundred thousand of this amount was appropriated by the general assembly, and I am sure the members who were present on Tuesday and Wednesday of the fair had no regrets for the part they took in appropriating this money for the large and commodious grand stand that was built with the money. We were unable to complete the stand with the appropriation made, as the lowest bid we had for completion of the ten sections was one hundred and sixty thousand dollars. With only one hundred thousand available we had to omit the interior and the back walls, but it certainly was a great improvement over the old wooden structure that was torn down and one did not hear the people talk about fire or panic. We erected another new brick cattle barn, and also another brick horse barn. When these cattle and horse barns are finally completed they will each be under one roof, and very convenient not only for exhibitors but for all who attend the fair. We are striving each year to better our facilities for handling the people to and from the city, and with the new arrangements now being made between the city and the street railway company I think another year you will find a great improvement along this line.

There has been a growing demand among exhibitors to erect permanent buildings of their own on the fair grounds, but up to this time the general arrangement of the grounds was such that we could not assign them space. This year has definitely settled the permanent improvements on the grounds and I think next year you will see some very creditable buildings erected by the exhibitors. We allow no permanent buildings that are not constructed of brick, stone or cement.

The Iowa State College of Agriculture occupied the entire building formerly known as the Women's Building, and every person who visited the exhibit was not only pleased but received a great amount of information from the different departments of the school. In the south end of the building a lecture room was set off and at different hours of the day lectures were given by the professors of the different departments. One department in this exhibit was very interesting to me for the reason of the intense interest taken; this was the domestic science instruction given each day by the lady in charge. Practical demonstrations were given in this work and one always found the room full of young ladies—and old ones for that matter—eager for information in this line. The other schools of the state have made application for space and it will not be many years before you will see practical demonstrations of their work. The Board of Control had an exhibit showing the work done in their institutions. All of these help to interest the people, showing what our institutions are doing along these lines. By concentrating the exhibits at one place like the State Fair and Exposition people who are unable to visit the different state institutions can see and judge of the work for which they are taxed to maintain.

In Iowa, with all the natural advantages with which nature has endowed her, and the interest the people are taking to make the most of them and continue to exhibit them at our fair, it will not be long known as a fair, but as Iowa's greatest exposition. What I would like to see erected on the grounds is a large machinery building with a track running through the center whereby the machinery could be unloaded in the building. This not only would be a saving to the exhibitors in this department, but would bring other exhibitors that otherwise would not come. Another very interesting thing would be a process or manufacturers building, showing the process of manufacturing as it is done in the factories. Iowa is fast coming to the front as a manufacturing state, and in this building people could see the method of manufactures. Not only would it be interesting but it would be a great advertisement for the products of the state in these lines. The time is not far distant when it will be necessary to cover the walks from the steam and street car stations and to all the permanent buildings on the grounds, and when that time comes rainy weather will cut but little figure with the attendance, for patrons can visit all the exhibits regardless of the weather.

The Board of Directors feel very grateful to the press of the state, the exhibitors and the patrons of the fair for the interest they have shown in making Iowa's annual exposition a success.

Mr. President: We will now listen to the report of Secretary J. C. Simpson for 1909.

SECRETARY'S REPORT.

In Iowa the year 1909 will be remembered by agriculturists for its variety of weather during the crop growing season. The rainy weather at corn planting time continued far into June. Thousands of acres of land prepared for corn was never planted. A great deal of corn was planted which the farmer was never able to cultivate more than once or twice, and in some localities, especially in southern Iowa, fields in large numbers were planted and never cultivated at all. Nor was the wet weather in the early part of the season alone responsible for the poor condition of many of our fields. The lack of rain, in certain portions of the state, during the month of August, was very harmful to the making of a good corn crop. Mr. Chappel, director of the weather and crop service, will read to you today his report and final summary of crops for the year. While I have not received any intimation of what his report will show, I feel quite certain that the government estimate of this year's corn crop is high. While the production of farm crops has not been so abundant for the year 1909 as in previous years, prices have been better all along the line; so that the net income to the farmer for his year's work will be greater. Prices received for cattle and hogs have steadily increased since the first of the year. Cattle have sold as high as $9.25; this being, I believe the highest price paid since 1886. While I do not exactly call to mind the highest price paid for hogs, it was around $8.50. Upon the whole cattle and hogs have averaged from one to two dollars higher than last year. So it goes—where we have a decrease in our yield and quality from one source, it is made up by a corresponding increase from other sources.

There is no denying the prosperity of our people at this time. No place on the face of the wide world within the limits of an area the size of Iowa will you find the people so universally prosperous as they are within the boundaries of our own beloved state in the closing period of the present year. The raising by popular subscription of over six hundred thousand dollars within the past twelve months for various purposes by the people of Des Moines is further proof of this statement. These subscriptions could only have been secured under the most favorable conditions, which could only exist in the city under like conditions throughout the rural communities.

PUBLICITY.

In my report one year ago I called attention to the need of a State bureau of publicity and advertising, giving briefly my reasons for such. What little investigation I have made, and information I have gathered since then, has strengthened my belief that this is a matter of vital importance to the future welfare of our state. It is a question that should be met squarely upon its merits and considered only in that light, and not as a public expense without benefit. While a bill to establish such a bureau was not presented to the last general assembly, it was discussed with various members during the session, most of whom did not consider it of sufficient importance to take up; others looked upon it as merely a scheme to provide some politician with a job. This indifference with which it was received by those members before whom it was laid was not at all strange.

We have so long drifted along in a happy-go-lucky, easy manner, growing corn and raising hogs, while our farm lands have increased in value by leaps and bounds, never giving a thought as to the future results from our decreasing rural population. Not a hand has been raised, nor an effort made in twenty years to discourage emigration from our state or encourage new settlers to come in. What we now have most to fear is that our awakening will not come until too late, for just as sure as the acreage in our farms is not decreased and a more intensive system of farming practiced, the time will come when land values will decrease just as they have in all of the eastern states. Thousands of our best farmers are leaving Iowa each year, in numbers much greater than others are coming in to take their place. This was indicated by the state census of 1905, and we predict that the census of 1909 will show a larger percentage decrease in our rural population. There are those who will point to our increased farm production and steady increase in land values to show the fallacy for alarm under present conditions. Our farmers each year find it more difficult to secure the necessary farm labor to properly tend and harvest their crops. The labor problem, in my judgment, will be an all important factor in the final determination of the land owner to decrease the acreage to be farmed by each individual.

The alluring advertisements of land agents, transportation companies, and state publicity departments, with no effort on our own part to counteract such advertisements, is the cause of many people leaving the most fertile and productive lands on the face of the earth, many times to be disappointed as to the productiveness of their new possessions. In fact, it has gone so far that Secretary Wilson is contemplating issuing a warning to farmers for the following reasons: He finds vast tracts of almost pure sand, left after cutting off the pine trees, are being advertised as farming lands of the finest description; undrained swamps described as priceless possession; and all sorts of inducements held out to attract purchasers of these worthless lands. A favorite device is to set out many thousands of slips or cuttings of fruit trees on common range land incapable of producing anything better than sage brush, and offer it to the innocent would-be purchasers as fruit lands of great value.

The Greater Iowa Club—a club that was organized for no other purpose than to try to bring to life the germ for action which has so long lain dormant and show the people of Iowa and the world that there were never better opportunities opened and ready to develope than are offered right here in Iowa, both for agricultural and industrial investment—was organized last spring. Since that time they have raised considerable money by popular subscription to carry on the work of gathering and disseminating facts about individuals and conditions in Iowa that would prove to these restless citizens that opportunity is knocking at their very door. Mr. Hill, the secretary of the club, made a most comprehensive and masterly address upon this subject before the Northeastern Iowa Editorial Association in May. It is an address that every citizen of Iowa should read and re-read that he may inculcate upon his mind the spirit which permeates Mr. Hill. Mr. Hill said in part: "Iowa men and Iowa money are taking the larger part in the development of the Pan Handle of Texas. They are paying for the irrigating ditches that are to turn Idaho into the promised land. They are making fruit ranches in Washington. Any two-by-four town west or south of the Missouri river boasts of one or more Iowa artisans. The irony of it is that any of them could have done as well or better in the state he left. What has caused this situation? Lack of faith; need of an Iowa spirit and personality. Spirit is essential to every undertaking. It wins athletic contests; it builds cities. It will do wonders for Iowa if it ever becomes properly instilled into our people."

Mr. Hill further says that we "stand idly by and allow Iowa men and Iowa with better results. Men have gone into irrigated districts, lured there is no means to tell the truth about Iowa and the truth about the locality they are going into. Men have gone to Texas to raise onions because there was no means of telling them that onions could be grown in Iowa with better results. Men have gone into irrigated districts, lured by the large acreage yields, because there was no means of telling them that the same sort of intensive farming would get results on Iowa land. Men have gone out of the state who would not have done so were Iowa being given publicity. This condition exists because we have gone on the supposition that we could raise corn and God would take care of Iowa.

Here is where we are mistaken; he has given us natural resources but we must exploit them. We must give the state the publicity that we may maintain our logical position in comparison with other states. This is why we need a publicity bureau, and why we are going to ask the legislature to establish one."

There are individual successes in Iowa equal to those to be found in any other state where large returns are annually received. During the past fall we have learned of several instances where the net profits of from one hundred to five hundred dollars per acre have been received from orchards, twenty to twenty-five dollars net for wheat, the same for corn, four to five hundred dollars per acre from the growing of celery and onions; and I have no doubt but there are hundreds and thousands of similar instances if a systematic canvass of the state was made. After such data is gathered it should be spread broadcast throughout the state and nation, and in foreign countries as well, by newspaper and magazine articles, leaflets, etc. This is the work of a well organized publicity bureau and is a legitimate and proper expense to be borne by the state, as all classes are benefited equally. It should not be left to a few public spirited men to raise a fund for this purpose by popular subscription. Our state is provided with an experiment station that conducts experiments along certain lines, but we lack a method for gathering and disseminating individual results. Nor are we alone lacking in making public individual successes from soil product. We have not yet awakened to the great possibilities in industrial manufactures. It has so long been a common expression, "Iowa is not a manufacturing state" that many have come to believe it never can be. Iowa is the largest purchaser of all kinds of farm implements and machinery, more than 90 per cent of which is manufactured outside the state. There are those who will say that the conditions and location are not right for Iowa to ever make much progress in manufactured articles. Do you know of a factory in Iowa backed by push, brains and energy that has not been successful? We have factories in Iowa today that are paying as large dividends as any to be found in any other state. This also is the field for work for a publicity bureau.

A great deal has been said about what can be done to keep the young people on the farm. In my judgment, if we will collect data and prove to these young people the financial gains to be had by following a system of more intensified soil culture, you will about have solved this perplexing question. For after all, success or failure is measured at the close of the year by net profits in dollars and cents, and if he can be shown conclusively that more dollars are to be had by staying on the farm, in most instances there is where he is going to stay. If the young man will not stay on the farm, let him come to the city, but stop him inside the state boundaries. This can only be done by increasing our factories. What we want and need is to let as few of them as possible get outside the state. We must not only make an effort to keep our own people at home, but induce others to come in, for we cannot build up our cities and reduce the size of our farms within our own limits.

This question of publicity is not theoretical or original, but is being practiced the world over, and if Iowa is not to suffer by the aggressive campaign being carried on by others she must wake up and do what others have been doing for years.

STATISTICS.

The old statute relating to crop statistics, having become obsolete, was repealed by the last general assembly and a new law enacted in lieu thereof. Under the new law not only crop statistics, but data relative to agriculture, education, agricultural labor, live stock, poultry and eggs may be gathered. It is made the duty of each and every assessor to report upon such statistics as may be called for by the department of agriculture. Blanks have already been prepared and sent out to the county auditors for distribution with the assessors. Previous to the enactment of this law reliable information upon our live stock statistics could only be had by the census report every five years. The same was true with reference to the poultry and egg production, farm labor, etc.

INSTITUTES.

In eighty-four of the ninety-nine counties of the state, farmers institutes were conducted during the fiscal year closing June 30, 1909. In at least two other counties reporting no institutes short courses were held. We do not have a report of the total number of short courses held in the state the past year but know the number was greater than for the previous year.

The following prizes were awarded for the best exhibit of corn by farmers' institutes or corn clubs at the Iowa State Fair and Exposition:

First, $60.00, Warren County Farmers' Institute.

Second, $50.00, Polk County Farmers' Institute.

Third, $40.00, Packwood Corn Club, Keokuk County.

Fourth, $30.00, Dallas County Farmers' Institute.

Fifth, $20.00, Sigourney Corn Club, Keokuk County.

The law relative to filing institute reports was amended by the last general assembly. As it now stands all entitled to receive state aid must file a report through the department of agriculture not later than June 1st. Upon receipt of the report properly filled out the secretary of the state board of agriculture will certify same to the State Auditor, who will issue a warrant for the amount due according to law and send said warrant to the county treasurer of the county in which said institute was held. It is in turn paid out by the county treasurer upon application of the executive committee of the institute.

In my judgment, our institutes could be improved by having some central head where dates could be arranged in circuits that speakers might more readily reach places of holding institutes at the least waste of time and money. A list of available speakers could be arranged, also questions of importance to the farmers suggested for discussion. In this manner whenever questions directly affecting the farmer were under consideration they could be widely discussed at the various institutes and thus get an expression from those interested. For instance, the change in our school laws should be thoroughly discussed and threshed out at the institutes during the coming winter. Then some time near the close, or at the close of the institute season, a general state meeting for institute workers should be held where the workers could exchange ideas. If these suggestions were incorporated in a law and placed upon our statute books it would be a radical change from the present system, but would give a better organization and system, which would, in my opinion, greatly add to the interest now taken in our farmers' institutes.

COUNTY AND DISTRICT FAIRS.

The county and district fairs have had a very successful season, as will be shown by their condensed financial statement to be published in the Iowa Year Book of Agriculture. While the usual amount of rainy weather was encountered, reducing the attendance and receipts of quite a number, taken in the aggregate their reports show a very healthy growth. This is specially noticeable in their exhibits, which, from the amounts paid out for premiums, was evidently the best and largest ever assembled at their fairs. I believe the meeting of the Iowa State Fair Managers held last December and the excellent addresses delivered there was a stimulus to every fair manager present. The report of the fairs held during the past season is further proof against the argument that people are losing their interest in the county and district fairs. On the other hand, they show that more interest is now being taken in them than ever before. The idea that the state fair will eventually kill the county and district fairs is an illusion, as is proved by the fact that some of the most successful fairs in Iowa are but a short distance from Des Moines. The county and district fairs are a big help to the state fair, and we believe the state fair is equally helpful to them in many ways. The last general assembly amended the law with reference to granting state aid to the fairs of Iowa, increasing the possible amount to be paid any association to three hundred dollars. As the law now stands forty per cent is allowed of the amount of premiums paid up to five hundred dollars and ten per cent of amounts paid over five hundred and up to fifteen hundred dollars. The full three hundred dollars was paid to but three fairs, viz: Marshall county, North Iowa District fair in Cerro Gordo county, and the Union District fair in Muscatine county. Cass county fell but one dollar short of receiving the full amount. Nineteen thousand and sixty dollars was paid in state aid to the eighty-eight fairs reporting, making an average of about two hundred and sixteen dollars per county. Sixty-seven of the eighty-eight counties received over two hundred dollars each. The total amount paid out by the state for the fairs of 1909 exceeded the amount paid in 1908 by about eighteen hundred dollars. The reports filed will show an average increase of six per cent in amounts paid out for prizes. The valuation of all fair grounds property shows an increase of twelve per cent over 1908, the total valuation being placed at about $670,000.00, or an average valuation of about $7,600.00. The indebtedness reported is about seventeen per cent of the total valuation, showing a very healthful condition of their financial affairs. The twelve fairs reporting the largest amounts paid in premiums are as follows:

Marshall County Fair	$2,263.05
North Iowa Fair (Mason City)	1,990.86
Union District Fair (West Liberty)	1,630.00
Cass County Fair (Atlantic)	1,490.79
Kossuth County Fair	1,213.00
Columbus Junction District Fair	1,208.25
Buena Vista County Fair	1,176.75
Hardin County Fair	1,136.40
Cedar County Fair	1,125.05
Clinton County Fair (DeWitt)	1,105.00
Wapsie Valley Fair (Central City)	1,075.30
Henry County Fair (Mt. Pleasant)	1,030.00

When you consider the amount of state aid received by fairs in other states, viz: Wisconsin, Illinois, New York, etc., which runs from seventeen hundred to three and sometimes four thousand dollars, you will have to concede that the fairs of Iowa reflect great credit upon the public spirited men with whom their management is lodged.

AGRICULTURAL SCHOOL.

The work of our Iowa State College of Agriculture and Mechanic Arts continues upon the same high standard. Its growth in attendance from year to year is very gratifying to those interested in the advancement of agricultural education in Iowa. The success attained by its student body in various judging contests is proof of its excellent corps of instructors. Only last week the judging team from Ames again won the Spoor trophy at the International Live Stock Exposition in Chicago against the best team from six or seven other agricultural colleges entered in the contest.

IOWA STATE FAIR AND EXPOSITION.

I am going to depart from my usual custom in telling you in my annual report what a great State Fair Iowa has and what it means to Iowa agriculturists, by quoting from the reports of ten or a dozen of the world's greatest live stock and agricultural journals. I want to prove to you by these quotations the importance of our fair as an educational institution, and to further prove its usefulness as a clearing house for the selling and buying of pure bred stock. I want you to listen to the comments made by others rather than from one whose heart and soul has been wrapped up in the Iowa State Fair for several years.

First I am going to tell you what a state fair really is by quoting from an editorial taken from one of America's greatest farm papers; it is as follows:

"The state fair is full of interest and meets the wants of the city and country worker alike. It is the state on exhibition. It is a great showing of its products, manufactures, crops, live stock, machinery, minerals, and all the methods and processes by which the state has attained its position in the world. *It is a great university which teaches by object lessons.* It is the one place where the results of their labors may be seen. *The state fair is the advertising agent of the state.* It is the great show window of its great store of accomplishments. It is the exposition center of all of the interests and industries of the commonwealth, and it is the place for the annual reunion of its citizens. To all its people the educational and social value of the state's fair is unquestioned and unmeasured, but it has a patriotic duty as well. It is a duty which each citizen owes to himself, his family, his neighbor and his state to attend the state fair, see what is to be seen, learn what is to be learned, touch elbows with his fellow men in the march of progress and spend a most profitable vacation."

This to my mind is not only a very clear and decisive definition of a state fair, but of its worth as well.

Of the last Iowa State Fair and Exposition "The Homestead" says in part:

"Fifty-five years ago Iowa set its fair the task of exploiting the possibilities and displaying the fulfillments of the state. As the years have passed both the possibilities and the fulfillments have increased. The brain and the brawn of eastern agricultural sections have settled in Iowa and been assimilated by the spirit of progress. New ideas have been eagerly accepted and modern methods followed, until the productiveness of acres has vastly increased. So the succeeding fairs have found larger and better displays, a more contented and prosperous people, and records have gone on being broken with almost monotonous regularity. *It remained for the* 1909 *state fair, however, to eclispe all the others and more conclusively prove beyond shadow of doubt to all the outside world that Iowa is the "Promised Land of Plenty." Never before was the prosperity so evident on every hand; never before did so many people attend the fair and show so much interest in the exhibits; never before were the possibilities of Iowa for the future so blended with the fulfillments of Iowa for the past.* For agricultural Iowa is bordering upon another Promised Land of Plenty this year, as it was when the first state fair was held. Real profitable dairying is just beginning; the ordinary cow is being displaced by the pedigreed; the uncertain profits of the past are about to give way to the certain, stable profits of modern scientific dairying. Improved machinery and the dissemination of up-to-date agronomy ideas are working together to make acres yield more bushels and tons than ever before. And so a quarter of a million people passed through the gates of the fair that they might jubilate over the past and learn for the future. Herein lies the real, true value of such expositions as Iowa has been holding for the past fifty-five years."

In Wallaces' Farmer we find the following heading in large type: "'MOST COMPLETE AGRICULTURAL EXHIBITION EVER HELD," with a preliminary statement to the general report as follows:

"The bone and sinew of Iowa was represented at Des Moines last week. Nowhere can there be found a more representative gathering of men who have made the great Mississippi valley the most prosperous agricultural section on the face of the earth. The Iowa State Fair is distinctly an agricultural exposition and is attended by typically agricultural folk—intelligent, prosperous, happy, well read, well fed, well dressed—the people who stand for "good farming, clear thinking, right living." It is because of the character of the people that the exhibits of practically everything needed on the farm and in the home may be found on the grounds—the very best of the improved breeds of horses, cattle, sheep, swine, poultry, vehicles, improved implements and appliances of every description, seeds of the best varieties of farm crops, fruits, plumbing and lighting systems, house furnishings, stoves, musical instruments—everything, in fact, needed on an up-to-date farm or of use in a well-ordered home. The man who makes anything or sells anything that will lighten the work of the farmer and his wife or contribute to their comfort has found that there is no better place to display his wares than at the Iowa State Fair. Iowa farmers are quick to recognize and appreciate anything of real merit."

The following is from the editorial pages of the "Spirit of the West:"

"The people of the state are beginning to realize the need of state aid to make necessary and needed improvements on the grounds to accommodate the increase each year in exhibits in all the departments. The importance and benefit to the farmers of Iowa and to the state at large is almost beyond calculation. The agricultural and live stock industry of the state of Iowa excels those of any other state and while Iowa soil has done much to give Iowa a great name the Iowa State Fair has been a leading factor in developing and promoting the growth of agriculture and live stock."

The editor of the Farmers' Tribune writes as follows:

"Another Iowa State Fair, the fifty-fifth annual, has passed into history. Another magnificent live stock and agricultural exposition has once more testified to the progress the Iowa farmer has made in recent years. The management of this fair has again demonstrated its well-known ability to hold a successful large show. The farmers as well as those indirectly dependent upon agriculture for support—and that includes nearly everyone living in the state—have again realized that the money the state has spent in building up a great state fair is well invested. The exposition was a great advertisement for Iowa. It bore witness to the fact that Iowa from an agricultural point of view is the peer of all her sister states. The 1909 exposition had perhaps a greater educational value than any show ever held. The Iowa State Fair has always been an educational institution of great value; the superior live stock, the large display of farm machinery, and other features having made it so. In recent years the phrase "Better than ever" has almost without exception been applied to each succeeding state fair. So common has this expression become that it actually fails to convey any real meaning to the majority of people. As a matter of fact, this phrase has told the truth each year, and applied to the 1909 Iowa State Fair it tells a true story of progress."

The Breeders' Gazette has the following to say:

"Half a century and five added years have contributed to the history of the Iowa State Fair, but no year has written so brilliant a record as 1909. The halting footsteps of a few years ago have been succeeded by the firm determined tread that presses irresistibly forward to assured success. Many causes combine to make this fair great, but perhaps the chief is that it deserves greatness.

"*The fair going spirit is stimulated by the attractiveness and adequacy of fair ground equipment.* While Iowa has not worn ten-league boots in its forward strides in state fair rebuilding, it has made that steady and substantial progress which bespeaks provision for the future. Temporary construction finds no place in the plans of the managers of this fair. Last year's construction account approximates a total of $150,000 spent. It was a big year's work, but every penny appears to have counted.

"Iowa's agriculture was typified in the agricultural building. For some years past the agriculture of the enterprising northwest has been dominant in it. Certainly these bright minded breezy men from the pioneer sections know a good thing when they see it. They are not to be blamed for displaying their attractive wares, unimpeachable evidence of the richness of virgin soil, in the most desirable space in Iowa's agricultural building. They could not get better advertising space. But "home first" is a pretty fair motto in such matters. In sharp contrast with some preceding years, more than 600 Hawkeye farmers were represented by farm product exhibits in the agricultural building, and the proselyting exhibits from the northwest, our newer states and Canada, were under tents, at so much per front foot for exhibition space. Even Uncle Sam, with his thoroughly staged bid for settlers on land under his reclamation act, rented space under a tent. This is as it should be.

"In the matter of judges, Iowa sets an example worthy of emulation. The members of the board have no political debts to pay in the selection of judges. Friends and neighbors are not given a free visit to the fairs. The aim is to select men wholly able and experienced, and the field is not limited to the borders of the state. Three of the judges this year were drawn from Ontario—one in the beef cattle section, one in the sheep, and one in the horses. It is refreshing to find a free hand in choosing judges, and a personal knowledge on the part of the superintendents of men qualified for the responsibilities of the position."

The Twentieth Century Farmer speaks of the last fair as follows:

"The Iowa State Fair for 1909 is another demonstration of the forward movement to greater and better things in state fair enterprises and achievements. It illustrated more positively than at any former exhibition of this great agricultural exposition that agriculture and agricultural tendencies are the bases upon which the business and educational interests of this great commonwealth are founded. It pointed out with unmistakable evidence, in every feature of exhibition interest, that the spirit of the times demands improvement and that nothing short of progress will satisfy the ambition of its people. This is a great fair, and its greatness is measured by the loyalty and support of its people as exhibitors and patrons."

The Kansas Farmer refers to the last Iowa State Fair in a most pleasing manner:

"When the State Fair of Iowa closed its gates on the evening of Friday, September 3, there ended the greatest agricultural and live stock exposition that was ever held in America. The Iowa State Fair impresses people in various ways but it impresses them all. One man of prominence in racing circles in another state was surprised to learn that the racing was not the most prominent feature of this fair as it had always been in other fairs which he had attended. Another man from another state and who is interested in the draft horse business said that he considered this fair to be the greatest state fair in the union because of the prominence given to the heavy horses. Both these gentlemen are correct.

"To Iowa is given the credit of creating and maintaining a state fair which is a model after which all others could pattern with profit. Here everything is in the right proportion; everything is represented and yet no feature is dominant. It is complete in every detail and is perfectly balanced. Being the first of a great series of fairs, the preliminary battles in the live stock show rings are fought out here each year and the exhibitor tests his methods of breeding and so marks his progress toward success. No matter how carefully he may have studied the problems of feeding and breeding; no matter how earnestly he may have worked in the care of his animals, he cannot know how well he has succeeded until his own animal, which has been the subject of his care for months, is lined up with others. Then he learns of his success or failure, and it is for these reasons that the Iowa fair is so important to the breeder and exhibitor of live stock.

"Iowa stands first in rank of all agricultural states and this proud position has been attained, in no small degree, through the influence of her splendidly managed state fair."

Kimball's Dairy Farmer says:

"For an all round fair that is truly great, Iowa leads. Other fairs may excel in some particular feature, but none is greater in its entirety. The educational feature of the state fair was brought out better than at previous times."

Orange Judd Farmer says:

"The great State of Iowa could not well turn off a poor fair if it tried. For years the Iowa state fair has stood right at the head in excellence. It goes without saying that this year was no exception. The state's resources in grains and grasses, vegetables and fruits, and last but not least an astonishing exhibit of Iowa-grown alfalfa, were demonstrated in the excellent state and county exhibits."

The St. Paul Farmer says:

"The great fairs held in previous years have led Iowa farmers to expect great things of the fair, in which expectations they have never been disappointed. Iowa is pre-eminently a stock growing section. Iowa farmers for many years have believed in diversified farming, and diversified farming in turn means live stock farming. In meat production Iowa has been well along towards the top of the list for many years. and to this fact she owes her increasing soil and increasing bank accounts. To supply the needs of the Iowa farmers in improving their flocks and herds there are probably *more breeders of pure bred stock in Iowa today than in any other one state in the country.* The live stock show at the Iowa State Fair has accordingly grown to be one of the most important live stock shows of every season. Nearly all the great breeders of the country take their exhibits to the Iowa State Fair, the first important fair in the fall circuit, and these foreign exhibits, augmented by Iowa exhibits, make up a live stock show, which in point of numbers and excellence is excelled by only the International show."

A stronger endorsement of the worth of the state fair in general, and of the last state fair in particular, could not be given than the comments just read from the pens of those so closely in touch with agricultural conditions and needs.

Never has a better balanced exhibit in all departments of the fair been on exhibition. There were 1,488 exhibitors in the thirteen departments, an increase of one hundred over 1908. The number of entries was 14,748, against 13,081 in 1908. The number of exhibitors and entries in the various departments follow:

	1909.		1908.	
	No. of exhibitors	No. of entries	No. of exhibitors	No of entries.
Horses	96	1,589	88	1.157
Cattle	82	1,210	82	1.085
Swine	187	2,139	224	2,505
Sheep	30	652	26	619
Poultry	79	1,539	67	776
Agricultural products	131	1,077	107	884
Farm implmts and mchy.	340	.....	319	.....
Pantry and apiary	112	1,235	91	1,351
Dairy	125	125	115	115
Horticulture	27	1,157	28	1,046
Floriculture	13	217	19	207
Fine arts	218	3,277	225	3,336
Educational	48	531	.....	.....
	1,488	14,748	1,391	13,081

It is with great pride that we can refer to the magnificent exhibit of horses. Never in the history of any show has such a great number or quality of horses been entered and shown. The exhibit of horses was one-third larger than that at the great International Live Stock Show held in Chicago last week. While there was a slight falling off in the number of cattle of the beef type, the exhibit of dairy cattle was the best ever made in Iowa. Over two hundred head of dairy cattle were entered; one herd came from Massachusetts, another from Pennsylvania, three from Wisconsin, one from Illinois, two from Nebraska, and one from Missouri, in addition to the Iowa herds shown. There was also an increase in the number of fat cattle. A less number of hogs was shown, principally for the reason that there has been a shortage of hogs all season; as to quality, it was better than ever. More interest in sheep is being taken each year as indicated by the show the sheep men are making. We predict that when it is possible to provide a suitable sanitary sheep barn in which to house this department, the sheep exhibit will be doubled in a few years.

The number of animals entered in the live stock departments follow:

	1909	1908	1907
Horses	922	765	472
Cattle	888	820	805
Sheep	650	600	475
Swine	1,950	2,275	2,345

While the threshermen did not make an exhibit this year, the number of exhibitors in the implement, machinery and vehicle departments was larger than ever, three hundred and forty exhibitors showing everything which man could want. There is a noticeable increase of interest by the farmers in silos and the various uses of cement for constructive purposes in farm improvements. The educational exhibit of farm corps made by the State Board of Agriculture was one of the most interesting and educational features ever had at the fair. The showing of alfalfa from over one-third of the counties in the state was a revelation to Iowa people. It simply demonstrated the fact that Iowa soil and Iowa people can raise almost any soil crop when they set themselves to do it.

I can best describe the magnitude of the exhibit by telling the number of cars and trains necessary to transport it:

Live stock	15 trains of 20 cars each	300
Machinery	15 trains of 20 cars each	300
Other exhibits	5 trains of 20 cars each	100
	35	700

The actual attendance this year was 216,840. This will show an increase over last year only from the fact that an actual account was kept upon the number of children admitted free on Saturday, which had never been done before. The attendance less the number of children on Saturday was about eight thousand less than last season. The rain on Thursday was accountable for this. Every day up to Thursday showed an increased attendance over 1908. The rain came down in torrents Wednesday night and continued throughout most of the day Thursday. The records show decreased attendance for this day over 1908 of 22,000. Following is the attendance by days:

Friday	3,178
Saturday	23,831
Sunday	17,154
Monday	27,606
Tuesday	58,105
Wednesday	58,993
Thursday	15,557
Friday	12,416
Total attendance	216,840

The weather conditions during the period of the fair were most unfavorable. At the opening it was hot and dry, no rain having fallen upon the grounds for over four weeks prior to the opening of the fair; the dust was something awful. While the management had three sprinkling wagons going day and night, the hot winds and sun would dry up the water very fast and the grass was brown and full of dust. On Sunday night it turned cold and by Tuesday morning overcoats were in order; then the rain came Wednesday night and Thursday, with a good shower on Friday morning. With all of this, the aggregate total receipts from the 1909 fair are but slightly under those for 1908. The decrease in the ticket sales was $2,889.85. In other receipts there was an increase of $1,432.59, bringing the total receipts of the fair but $1,457.26 less than for 1908.

IMPROVEMENTS.

One hundred and fifty-seven thousand, six hundred and fifty dollars and thirty-two cents was expended for improvements at the State Fair grounds the past season. Of this amount one hundred thousand dollars was received from the state by appropriation from the last general assembly for the building of the amphitheater, new track, etc., the balance must be paid for out of fair receipts. In the past two years $115,950.00 has been expended for improvements out of fair receipts. The improvements made from the same source in the past eight years is over one quarter of a million dollars besides an aggregate net increase of premiums paid to the amount of $100,000.00. The past season saw many needed improvements added. Besides the steel and concrete amphitheater, the track and speed barns were moved, swine show pavilion finished, additional sections to the given in the financial report.

Following is a statement showing amounts expended annually for improvements in the past eight years and the source from which the money was received.

	From fair receipts	From appropriacation by the state	Total
1902	$ 26,400.00	$ 37,000.00	$ 63,400.00
1903	18,000.00	....	18,000.00
1904	12,600.00	47,000.00	59,600.00
1905	12,000.00	....	12,000.00
1906	30,000.00	....	30,000.00
1907	41,400.00	75,000.00	116,400.00
1908	58,300.00	....	58,300.00
1909	57,650.00	100,000.00	157,650.00
	$256,350.00	$259,000.00	$515,350.00

I cannot refrain from referring to the seemingly new interest being taken at the present time in many of the states looking toward a more liberal policy and more permanency in building of state fair grouds. I received only a few days ago the reports from New York state upon the reconstruction of their State Fair. Their general assembly has approved the plans presented which when complete will cost over two million dollars, $478,000.00 having already been appropriated and expended within the past two years. In this work the fair commission has the loyal support of Governor Hughes.

FINANCES.

The total receipts of the department for the year have been $243,564.82. Of this amount $100,000.00 came from the state for the building of a new amphitheater, $1,000.00 for insurance, and $137,307.40 receipts from the fair. Had the weather not been unfavorable the total fair receipts would undoubtedly have run from $15,000.00 to $20,000.00 higher. Up to Wednesday night of the fair the total receipts were about $10,000.00 ahead for the corresponding period last year. The rain on Thursday brought the receipts down to less than fifty per cent of the receipts for the same days in 1908. Friday was also a bad day. Practically no amphitheater receipts were received on these days, but at that the total amphitheater receipts show a slight increase over one year ago. We were rather unfortunate in having the lighting plant fail us on Monday night. The night stock pavilion show had to be abandoned and all money refunded. The nature of the spectacular show at the amphitheater was such that by the use of torches the same could be carried on, which was done, but utter darkness on the streets and grounds stopped any further sale of tickets.

There was paid out for premiums on exhibits $45,285.41, an increase of $6,640.85 over 1908. The net expense for the fair was $109,229.88; the net profit $28,081.52. Our statement will show a cash balance of $4,985.25, the balance of the profits from the fair having been taken up in the improvement account.

STATEMENT OF ACCOUNT.

RECEIPTS AND DISBURSEMENTS, IOWA DEPARTMENT OF AGRICULTURE, FOR THE FISCAL YEAR ENDING NOV. 30, 1909.

RECEIPTS.

To cash balance Dec. 1, 1908			$ 25,328.73
From fees, Division of Horse Breeding		1,065.50	
1902	$ 26,400.00	$ 37,000.00	$ 63,400.05
From state, appropriation for buildings		100,000.00	
From state, for insurance on fair grounds buildings		1,000.00	
From refund on pay rolls, use of grounds and concessions, Military tournament		952.20	
From interest on deposits		588.62	
From rental and sale of old lumber and other collections by Supt. J. H. Deemer		2,481.21	
From miscellaneous collections by Secretary		169.89	$106,257.42

By receipts 1909 State Fair—		
From advertising	$ 716.00	
From entry fees, speed department	4,375.75	
From sale of exhibitors' tickets	2,490.00	
From sale of forage	4,948.09	
From entry fees, judging contest	18.00	
From sale of ice	332.19	
From miscellaneous collections by secretary	4.50	
From various live stock breeding associations for special premiums	2,250.00	
From revenues, concession department	21,491.52	
From stall rent, horse department	858.00	
From stall rent, cattle department	972.00	
From pen rent, swine department	1,065.00	
From pen and coop rent, sheep and poultry departments	637.00	
From sale of light and power	273.50	
From sale of space, machinery department	1,189.50	
From sale of space, agricultural building	550.00	
From receipts, dairy department	567.50	
From sale of space, exposition building	2,530.00	
From fines, police department	33.25	
From sale of tickets	92,005.60	$137,307.40
		—$268,893.55

DISBURSEMENTS.

To expense warrants paid by Treasurer—		
Issue of 1908 and former years	$ 146.70	
Issue of 1909	221,525.89	$221,672.59
To premium warrants paid by Treasurer—		
Issue of 1908 and former years	$ 185.69	
Issue of 1909	42,050.02	$ 42,235.71
To cash balance in treasury Nov. 30, 1909		$ 4,985.25
		$268,893.55

STATEMENT OF EXPENSE AND PREMIUM WARRANTS.

ISSUED DURING THE FISCAL YEAR ENDING NOVEMBER 30, 1909.

Improvements and repairs—	
Swine show pavilion	$ 6,520.17
Extension to electric light and power system	970.30
Street improvements	605.51
Walks	6,876.25
Add'l section to permanent horse barn	3,620.18
Completion of Administration building	6,641.47

Amphitheater		88,127.07	
Track, moving and repairing speed barns, etc.		12,086.03	
Moving and repairing horse barns on south side		1,092.91	
New cattle barn		5,711.90	
Cement $	58.40		
Hardware	599.24		
Implements and tools	85.85		
Lawn seats	190.17		
Moving and repairing small buildings	370.36		
Concrete bridges	2,085.47		
Improvements to Poultry building	2,183.00		
Removing old amphitheater	802.59		
Improvements to Agricultural building	2,979.71		
Band stand in plaza	254.78		
Remodeling old office building for Rest Cottage	371.90		
Band and vaudeville stages at ampitheater	2,541.78		
Ice house	177.75		
Team	440.00		
Grading	1,833.20		
Painting	975.31		
Awnings	168.20		
Additional toilets	369.90		
Additional water supply	237.08		
Miscellaneous improvements	1,232.10	$ 17,956.79	$150,208.58

Expense other than for fair, improvements and insurance—

Fair grounds maintenance		$ 2,348.21	
Expenses com. on adulteration of foods, seeds, etc		17.80	
1908 claims paid in 1909		726.30	
Expenses com. on contagious diseases.		64.05	
State Farmers' Institute expense and corn premiums		196.25	
State board meetings		419.70	
Clerical services		325.00	
Books $	12.23		
Supplies	25		
Labor at grounds, account Military tournament	270.12	282.60	$ 4,379.91

Expense 1909 State Fair—

Postage	$ 847.25
Advertising	8,177.49
Executive committee meetings	1,084.85
Expense special committee work	1,066.88
Expense privilege department	1,074.80
Expense telegraph and telephone	351.71
Printing	2,40[illegible].91
Forage department	4,783.95
Office salaries	3,676.85
Light and power departments	1,587.01
President's department	117.75
Ticket auditing department	439.35
Police regulation department	2,310.80
Treasurer's department	1,240.71
Music and attractions	15,865.62
Admissions department	2,694.64
Speed department	625.60
Horse department	893.20
Cattle department	783.30
Swine department	643.10
Sheep and poultry department	600.00
Implement and machinery department	458.25
Agricultural department	414.19
Dairy department	329.50
Horticultural department	156.15
Judging contest	62.75
Floricultural department	64.00
Educational exhibit of farm crops	2,294.93
Fine arts department	581.40
School exhibits department	196.42
One half expense Iowa State College exhibit	757.32
Expense auditing committee	93.10
Ice	292.19
Assistants to superintendent of ground	144.29
Rest Cottage	56.45
Labor pay rolls, grounds department	3,900.46
Dues Iowa Association Fair Managers	8.00
Decorations	347.50
Headquarters for camp grounds	69.00
Office boys various offices, Administration building	72.50
Janitor services	246.25
Expense for special days	269.55
Cleaning out amphitheater daily during fair	90.00
Garbage and scavenger work	290.75
Water	300.80

Expense 1909 State Fair—Continued.

Supplies, stationery, etc	475.40		
April board meeting	298.50		
Pay rolls, team work	796.82		
Dues American Trotting Association	100.00		
Rental tents, chairs, etc	356.90		
Gasoline	40.59		
Grass seed, plants and shrubbery	362.40		
Ribbons, badges, medals and cups	734.74		
Refund admissions	14.25		
Pay roll, caring for closets	214.50		
Firing boilers at dining halls	36.00		
Photographs	294.20		
Dues American Association Fairs and Expositions	25.00		
Premiums paid by expense warrants	70.00		
Miscellaneous expense	377.30		
		$ 66,963.12	
Premiums paid—			
On horses	$ 7,273.00		
On cattle	10,153 00		
On swine	3,035.00		
On sheep	2,057.00		
On poultry	988.50		
On agricultural products	2,976.50		
On pantry products	793.00		
On dairy products	596.81		
On horticultural products	907.25		
On floricultural products	884.20		
On household and art work	1,812.50		
Scholarships judging contests	1,000.00		
On school exhibits	261.00		
On corn at State Farmers' Institute	335.00		
On speed contests	9,190.00	$ 42,262.76	$109,225.88
Total amount of warrants issued.			$263,814.37

GENERAL SUMMARY.

To credit cash balance No. 30, 1909			$ 4,895.25
To debit by unpaid expense warrants—			
Issue of 1908 and former years	$ 35.00		
Issue of 1909	25.72	$ 60.72	
To debit by unpaid premium warrants—			
Issue of 1908 and former years	$ 14.00		
Issue of 1909	212.74	226.74	
Total debit by unpaid warrants		$ 287.46	
To debit by unpaid balances due on contracts	$ 7,441.74		
To debit by unpaid bills	570.88	$ 8,012.62	
Total amount debits Nov. 30, 1909		$ 8,300.08	$ 8,300.08
To debit profit and loss account Nov. 30, 1909			$ 3,314.83

SUMMARY RECEIPTS AND DISBURSEMENTS.

IOWA STATE FAIR AND EXPOSITION, 1909.

To total receipts		$137,307.40
To total disbursements	$109,225.88	
To net profit	28,081.52	$137,307.40

Horse Barns Iowa State Fair and Exposition Grounds—Three Sections Completed

CONDENSED FINANCIAL STATEMENT OF THE IOWA STATE DEPARTMENT

Showing Receipts and Disbursements of Iowa State Fair and Other Sources and Net Profit of Fair for Each

Year	Receipts							
	Cash balance beginning one year	In reserve fund	From state fair	From state appropriation	From other sources	Total receipts for year	Grand total	Premiums paid
1896	$ 116.79		$ 36,622.10	$ 7,000.00	$ 6,710.22	$ 50,332.32	$ 50,449.11	$ 16,404.29
1901	28,616.55		50,712.91	1,000.00	2,753.82	54,466.73	83,083.28	19,203.83
1902	34,244.93	$ 12,000.00	63,084.71	38,000.00	3,037.06	104,121.77	138,366.70	21,736.31
1903	30,372.25	15,000.00	59,838.56	1,000.00	3,140.79	63,979.35	94,351.60	23,813.13
1904	28,963.11	15,000.00	66,100.36	48,000.00	2,622.03	116,722.39	145,685.50	24,691.68
1905	29,657.23	15,000.00	84,786.25	1,000.00	2,840.92	88,627.17	118,284.40	28,730.89
1906	39,976.34	15,000.00	110,929.85	1,000.00	3,717.16	115,647.01	155,623.35	31,703.94
1907	50,294.87	15,000.00	104,356.75	76,000.00	5,452.34	185,809.09	236,103.96	35,504.79
1908	35,327.90	15,000.00	138,764.66	1,000.00	3,262.95	143,027.61	178,355.51	38,744.56
1909	25,328.73	15,000.00	137,307.40	101,000.00	5,257.42	243,564.82	268,893.55	42,262.76

OF AGRICULTURE FOR YEARS OF 1896, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909

Expenditures, Together With Amount Expended for Improvements, Repairs, etc., and of the Years Named.

Disbursements							Profits of Fair		
Other fair expenses	Improvements and repairs	Disbursements other than for fair	Total for year	Cash on hand	Previous year's business or outstanding warrants	Grand total	Total receipts of fair	Total expenses of fair	Net profits
$ 15,351.03	$ 7,471.95	$14,010.88	$ 53,247.28	$ 152.84	.....	$ 53,400.12	$ 36,622.10	$ 31,807.35	$ 4,814.75
13,925.87	13,378.73	2,313.44	48,821.87	34,244.93	$ 13.48	83,083.28	70,712.91	53,129.70	17,583.21
20,073.34	63,457.12	2,698.69	107,875.46	40,372.25	118.99	148,366.70	63,084.71	41,809.65	21,275.06
21,989.56	17,855.77	1,794.83	65,363.29	28,963.11	25.20	94,351.60	59,838.56	45,802.69	14,035.87
28,485.42	59,641.11	3,195.43	116,013.64	29,657.23	14.63	145,685.50	66,100.36	53,177.10	12,823.26
34,408.62	11,963.09	3,345.27	78,447.87	39,976.34	159.81	118,581.40	84,786.25	63,139.51	21,646.74
40,315.60	30,035.33	3,385.87	105,140.74	50,294.87	112.26	155,623.8	110,929.85	72,459.39	38,470.46
43,647.20	146,449.05	5,043.03	200,654.07	35,327.90	176.19	256,103.96	104,356.75	79,151.99	25,204.76
55,848.65	58,663.69	4,975.59	153,231.98	25,328.73	581.29	178,575.51	138,764.66	94,593.21	44,171.45
68,963.12	150,298.58	4,379.91	263,814.37	4,895.25	332.93	269,042.55	137,307.40	109,225.88	28,081.52

Mr. President: We have with us today a gentleman from Nebraska who will address you upon "The State Fair Exposition." I take pleasure in presenting to you Mr. W. R. Mellor, Secretary of the Nebraska State Board of Agriculture.

THE STATE FAIR AND EXPOSITION.

W. R. MELLOR, SECRETARY NEBRASKA STATE BOARD OF AGRICULTURE.

First of all I desire to congratulate you upon this excellent report of Secretary Simpson. And I assure Secretary Simpson that we in Nebraska always take off our hat to Iowa as the leading agricultural state in this country. But we are somewhat of the impression that Nebraska is not very far behind for the number of population as compared with some of the older states.

In my appearance before this splendid body of state and county fair workers it is my earnest desire not to especially entertain you, but to drop some word or idea which may be of future benefit to the success of the organization favored by the results of your labor.

The success of the fair depends upon the untiring energy displayed by its officers in charge, each of whom should have a certain specific department to oversee, with practically full authority. The great burden of the detail of preparation and consummation must be borne by the secretary as he is the man who must know everything about its minutest detail. If some specific work is delegated to another he must acquaint himself with its daily progress and be a veritable encyclopedia of information, covering every phase touched upon in fair building. To be a success he must know how many horse and cattle stalls there are, how many are taken, what particular breeds are to be assigned to each specific place, what the opportunities are for forage and feed, and its price, when the animals must be in place, how and when removed, rules governing their showing, who the judges are, when the judging is to begin, when the premiums are to be paid, and every little detail must be on the end of his tongue. Not only must he have this information about horses and cattle, but also about sheep, swine, dairy, poultry, farm products, bees and honey, domestic products, ladies' textiles, fine arts, educational, advertising, concessions, speed and each and every detail of information which is necessary to satisfy the public or exhibitor at the great annual show of our best products and resources.

A thorough knowledge of responsibility is exemplified in Mr. Kountz, a member of the great firm of western bankers, who resides in Denver and has charge of the local bank, and who is said to keep in such close touch with his business that he can go to any department and take the place of each and every employe during his absence. Occasionally some new clerk is said to suggest a shorter method of bookkeeping, which is invariably turned down, with the reply that the present system is thoroughly understood, and, while it may take a clerk or two more to continue it, still, the absolute knowledge of the system amply repays the extra outlay. While the customary information bureau may aid in disseminating the general information necessary at the fair, the man who makes himself valuable as a secretary, or in any official position, must have a full knowledge of the business with which he is entrusted.

As a general rule, exhibitors and patrons will readily recognize ability and actual worth in the official, even though he may lose his genial disposition during the heavy stress of labor, at the time of the exposition, but no amount of "good fellowship" will avail an incompetent in office. In this age it is necessary to "make good" in any position or step aside for another.

Among the most important officers connected with the Fair is the department superintendent. Here in Iowa you may be blessed with the happy selection of a "live wire" as superintendent of the departments of your Fair, but from experience when we find one who is alive to the necessities of his department, we have another who never bothers about the success of his department until he comes upon the Fair ground, and then he wonders why his department is so lamentably weak in comparison with that of the superintendent who has been working to secure a meritorious exhibit. As a usual thing these non-working superintendents come to the conclusion that the secretary has not assisted to work up his department in the same energetic manner in which he has the department with outstanding merit; and it is true that he has not, for a secretary who is urged along some particular line by a working superintendent unconsciously does a great deal more for that department than even he himself knows.

When thinking of this we are reminded of the preacher's baby which happened along some six or seven years after the family had been blessed with their first-born, whose companions one day asked him "how the baby got what she wanted when she could not talk?" The little boy answered that it wasn't necessary for the baby to talk; all she had to do was "just holler and she gets anything she wants in our home."

So it is with the department superintendent; he will get pretty nearly anything he wants from the officers if he will "just holler." And if this is true, why is the reverse not true? Therefore, Mr. Secretary, let me urge upon you the necessity of securing the earnest working co-operation of your superintendents, not by writing them one letter with the information of their appointment, but by systematically urging them each week, of the necessity of the success of their particular department. My experience has led me to believe that many men throw away, or mislay, the first letter with very little thought on the subject matter, but when they receive the second, third or fourth, they begin to take notice and if there is the usual amount of energy which is in so many men who are selected, they will begin to work, if they have the proper amount of sand, and if they have not, they had better draw a lesson from the bright saying of the Council Bluffs girl, who was out walking with her best fellow one Sunday afternoon. Coming to a secluded nook, he conceived the idea that he would like to kiss her, so, puckering up his lips, he leaned toward her; but his heart failed him and he straightened up without the coveted luxury. Seeing a small cloud come over her face, he put up his hand and began fumbling at his lower lip, when the girl asked him, what was the matter? Answering, he said: "I have got some sand in my mouth." She quickly answered, "Swallow it, George, swallow it, you need it, it will do you good."

As soon as the superintendent begins working he becomes interested, and then his service is sure to be of the kind which rarely fails in being crowned by success, for he is usually selected because of his ability to take an energetic interest in public matters. I am fully convinced that the reason you are here listening to us today is because you are one of those who take an interest in the public welfare of your respective communities.

It has been our privilege to live in a small county seat town in central Nebraska for a number of years. During that period of our life we endeavored to participate in all the public enterprises of that commonwealth, so much so, as seen through the eyes of other people, that seemingly, at times, we have neglected our private interests. During the time we resided there, it was our custom in securing employes to give strong preference to the young man who could meritoriously do some act of a public nature. We have employed more than one man because he was an excellent baseball player or singer. Possibly some of you may not agree with me in this fancy, but all towns secure a great amount of advertising through a good baseball club, and to be connected with the active life of the young people of our community, was a business asset worthy of deliberate consideration.

Young people are a splendid advertising medium and the energy of their surplus steam may be used to advantage by judicious handling. Upon them you must depend for the enthusiasm in the campaign for your coming exhibition. The more you can appeal to their whims or desires, the more they will talk your enterprise. If they are deeply interested in your great special event, speed, the baseball game, the athletic contest, or even the wild west show, they will talk it in their respective households, and thereby create an interest which may turn probable failure into success. The very best exhibit you can have on your grounds is an exhibition of Iowa boys and girls; do not bother very much about securing the old fellows, the young folks will do that for you if you can interest them.

Nebraska is said to have one of the best educational exhibits shown at any of the state fairs and expositions. An entire room, 48x96 feet, is devoted to this one feature. We work through the state superintendent of public instruction who is also superintendent of this department. Early in the year we send out a prospectus to each of the 10,000 teachers in Nebraska and from time to time each county superintendent and teacher is reminded of the progress toward a splendid exhibit. This is not for the purpose of securing merely an educational exhibit, but principally for the purpose of carrying the news into every home that Nebraska intends having the greatest fair and exposition in its history.

Owing to the fact that we follow Iowa, whose wisdom in the selection of the last week of vacation, as the time of its annual exposition, has always attracted my admiration, we are somewhat deprived of the benefits of this advertising, as nearly all the schools in the state open on the first Monday in September, which is the first day of our fair, and which detracts from the energy of the work done by our youthful advertisers. Let me urge upon every fair official to endeavor to get the county superintendent working, and note results.

The older people who attend the fair do so from the realization that it is the one place where a liberal education can be secured on any particular phase of practical farm life in a shorter space of time than can be gathered elsewhere. For the permanent good of western agriculture it is my pleasure to urge you to advocate the sending of every boy in your community to your splendid school at Ames, or, if you prefer, to our school at Lincoln. Every true Iowa son should be able to spend the time necessary to go through the Agricultural College, and there receive the training which will permit him to assist in carrying on the agricultural interests of his state, until it occupies the position which rightfully belongs to it; not occasionally first in production, but first every year. It can be done.

You, "boys," who are too old, and that occurs only after you have passed seventy-five, and whose family and business cares prevent you taking a course at Ames or Lincoln, should religiously resolve that you will never miss either your county or state fair, for there will be found the object lesson which teaches more at a glance than could be learned from books or lectures in a week; there you will view the outstanding points of the animal and raw comparisons with the animal at home which is "just as good," except in a point or two, about which you may comment lightly with a hearer, but nine times out of ten you will profit by that identical comparison. There you will make a selection of the machine which you are intending to buy very soon. There you have the opportunity of examining the various makes shown to their best advantage by the experts in charge, so that you will have positive information as to the particular machine which is best adapted to your needs, and when the time for purchase comes you go to your machinery salesman in your own town and say to him, "Mr. Machinery Man, I want such-and-such a make of a machine," and after he finds out that there is no such a thing as a "just as good" machine of the same kind in other makes, he orders it for you and you get what you want.

Here is what Dean Davenport at the Illinois Agricultural College says of the International Live Stock Exposition at Chicago, and that which applies to this is applicable to every other like show:

"Not one, not even those responsible for its development has adequate conception of the influence of the 'International' upon American live stock interests. As a practical educator it cannot be surpassed; as a stimulus to trade it has no equal; as a means of shaping policies and correcting ideals, its influence is supreme. A decade or two ago such a thing would not have been possible in this country. It seems incredible now that a company organized primarily for business, should see its way to expend so much time, energy and money in the establishment of such an exposition That it will pay there is no doubt. The pay will come in a thousand ways. The live stock interests will be more prosperous; the individual farmer who lives by it will be more successful, and the multitude of interests that depend upon live stock will thrive the better for it.

"The marvel of it all is that such a thing could be at all. It shows the breadth of the commercial spirit in this country, the generosity of live stock men, and the readiness of the American farmer to respond to modern methods and conditions. What should be said of the man who does not go? That he is blind to his own best interests is certain; that he will get behind in the race and be lost in the shuffle is no less true; that the young man who will come in after him will ultimately possess his herds and lands, goes without saying. This is the age when every business must be studied, and farming is no exception; indeed, it looks more and more as if farming were coming to be one of the most complicated professions and that the more is learned of it, the more complicated it becomes.

"Let the 'International' live long and prosper. This certainly will be true. The only uncertainty is how much good will individuals get out of it. This rests entirely upon them and depends upon whether they attend the exposition or whether they stay at home and find fault with what they have not helped to accomplish. May they and others go."

Iowa is especially favored in its School of Agriculture and Experiment Station at Ames, which has done so much in the past in the dissemination of practical, scientific knowledge among the Iowa farmers. The campaign of this school for the improvement of corn alone has resulted in additional untold wealth to your citizenship and is commanding the admiration of the whole country. That a state which was the borderland of the great American desert at the time of the Civil War should now consistently occupy the coveted position of the first or second corn-producing state in the union, is a fact which should cause every Iowa bosom to swell with pride. Another branch of the work done by your famous school of agriculture is the attention it has called to your citizenship, of the necessity of better live stock to consume the high priced products of your farms. That this teaching has not been in vain is evidenced by the hundreds of fine, pedigreed herds, scattered all over this commonwealth, a practical demonstration of which was seen at the last Iowa state fair, during which it was my pleasure to visit the wonderful exhibits of Shorthorns, Herefords, Aberdeen Angus, Galloways, Red Polled, Polled Durhams, fat cattle and, last but not of the least importance, the fine Jerseys, Guernseys, Holsteins and other dairy cattle which are contributing their share of prosperity to your people.

A careful study of this great department of your state fair will convince the most skeptical that some great power of educational value is at work in the farming communities of your state. The finished products in the animals there exhibited show experienced judgment and skill, made possible only after long, experimental tests, which is the great province of the school of which you are so justly proud. It has also been my experience to notice that when a boy has been privileged to attend a school of agriculture that it completely changes his rough handling of stock to kind, gentle, considerate treatment, which materially pays from a financial as well as a humanitarian standpoint, and commands the admiration of eye-witnesses.

Not only is your school of benefit to Iowa alone, but we in Nebraska participate in its advantages as many of our fathers and grandfathers have secured the basic principles of their success during their earlier citizenship in Iowa, and the strict application of your teachings applies to our welfare in Nebraska as truly as it does in Iowa, therefore, your experiments and findings are valuable to your neighbors.

Some of you may have read the article which appeared a few weeks ago in a farm publication, relating how Arnold Martin, a young Swiss farmer, has succeeded in converting twenty acres of barren land in Pawnee county, Nebraska, into a highly profitable farm, in a little more than ten years, through a practical application of intensive farming. The land he purchased in 1898, with land all about it selling at $70 and $80 per acre, for $12.50 per acre, it being considered as practically worthless. In his earlier years he studied agriculture in the public schools and with the education thus secured, together with the practical experience he had in subduing his little patch of ground into a fertile acreage, he came to have a clear knowledge of intensive farming. In 1903, for several months, he assisted in the Agricultural Department of Union College, at Lincoln, and since has several times been called out upon Farmers' Institute work.

What Mr. Martin considers one of the important branches of his work is exposition and a fair exhibiting. He secured awards at the Nebraska state fair during the past season amounting to $410.25, and from the Kansas City fair the amount of $593.50, making a total of $1,003.75 from the two fairs, and which amount, in itself, would have been a profitable income from his twenty acres for the year. Mr. Martin's farm is a good example of what is being attempted and what is being done in the way of modernizing agriculture. As our civilization progresses and increases every phase of our earthly labors, with agriculture among the number, will be brought up to the same basis, and the change from extensive farming to intensive farming will be only a step in our onward march and our upward climb.

But, as to the successful working out of the principles by Arnold Martin, the story of how he does his work and what he thinks of intensive farming is best told in his own words. He says:

"It is always a great pleasure to me to be called upon to write about my 20-acre farm and the crops I have grown upon it. It is another one of my pleasures to be able to exhibit those crops, as this year they brought in, through exhibits, $1,000 from two fairs alone, Lincoln and Kansas City, and at the Chicago National Corn Show I was the heaviest winner from the southwestern corn belt, taking $325.

"The farm this year is divided as follows: Eight acres in field corn, one acre in popcorn, one-half acre in small grain of forty varieties, two acres in potatoes, one acre in vegetables, two acres in alfalfa, two acres in grasses, two and one-half acres in pasture (one-half timber), three acres orchard, one-half acre onions and one-half acre in millet. Total 23 acres.

"I will explain where the three extra acres come in: Two in alfalfa; the first cutting from one acre of alfalfa was harvested May 24th and plowed and planted to white rice popcorn, pumpkins, squashes, beans and all sorts of late vegetables with good success. Of the two acres of potatoes, one-half was planted in corn after the last plowing of potatoes; one-half acre of German millet was sown the 24th of May, after the last plowing of the potatoes; the millet harvested the 25th of August, and the ground disked up twice ready for alfalfa early in September.

"Five hundred loads of manure have been hauled onto the place in the last three years besides what the farm has produced itself. As many as thirty loads to the acre have been hauled from town, two miles distant. I do not know just how much good the large quantities of manure did the land, but I think that the $1,000 is a good answer, and I will hear more of it in the future. In years to come the crops will tell. I have 326 bushels of corn at hand and the rest is cut up in the shocks for feed. Of my potatoes, I still have about 200 bushels on hand, and, as we raised considerable fruit and vegetables during the summer, we have a good supply ready for winter.

"Am I hauling more manure, to raise more corn, to make more money, to buy more land? No! No! No! If I had more land I would have to hire some help, and hired help is hard to get for my style of farming. My 12-year-old girl knows more about my work than a great many men do, and for the past two years I have never called upon my wife to assist with the outside work. We neighbors exchange work and I always aim to be ready for the work and look ahead and help out some other fellow who is overloaded with more land than he can manage.

"Farming carried on intensively looks to many persons like starvation, and not profitable enough to support a family or lay something away for a rainy day. There are two ways of looking at a small farm, and the common one is that, rather than a place to make a good living, the small farm is a hard place to live, and a place which should be sold as quickly as anything else offers. The other way of looking at it, and the way that it looks to me is this: the ownership of a few acres of land is a mark of honor; to hold a clear title to a few acres of land is a title which ranks above the titles of nobility; the ownership is absolute and the proprietor is independent, and it is his duty to himself and to the coming generations to keep up fertility and improvement on his land.

"The more intensive the method of farming carried on, the more necessary is experience, and the getting of this experience lies in working out the problems of the field and getting the answer direct from nature, in the garden, the orchard, the field or the granary. How to bring about the rural changes necessary for a better education on the farm is a question, the answer to which must come from the colleges. But the colleges have failed in many ways to keep the college trained young man on the farm and, this being the case, I contend that the world's best agricultural college is a home on the farm. By this I mean the small farm, for personal work is best for the man, the land and the coming generation. There is no school or college in the country that gives as varied an education and instruction as farm life, nor one which so strongly and lastingly impresses the mind of the student. It is a school where common sense is taught by common things, and how to use them to the best advantage. And such wisdom comes only through doing common things, too common, it seems, for so many. That is the reason why many people do not understand how some individuals seem animated libraries, veritable walking encyclopedias of the common knowledge so useful in everyday life on the farm. The education gained on the small farm broadens citizenship. Go where you will in the world, with the small independent farmers the best government exists, for they are the people who are lovers of their homes.

"The farmers in those sections of the country where there are plenty of them to control the ballot are well versed in many of the intricate points of politics. Each has learned to keep a reserve of cash and their accumulations have become a most important factor in the finance of the nation, for their deposits are vastly more reliable than those of the capitalists in the commercial centers.

"The money necessary to carry on the business of the nation is not received from the deposits of the money kings, but from the millions of small, thrifty depositors. We have all observed that many boys, grown up on small farms, have developed themselves in innumerable ways. From the days of their earliest childhood they are compelled to "do things," and in a majority of cases, independently and without help. Their training is thorough, and from this source alone the greater number of men to fill the responsible positions of life are drawn.

"Blessed be agriculture if a man have not too much of it." Eighty acres is too much, 160 a misfortune and 320 a calamity."

The quotation I have just cited, and the large number of similar successes on small farms which are being brought before the attention of the agricultural world every day in the year, goes to show that the star of intensive farming is just in its ascendency. The great possibilities of the small acreage given the benefit of every scientific agricultural invention, rather than the larger acreage, which cannot possibly receive the same care and attention, are beginning to demand consideration. If such a development as that narrated by Mr. Martin is possible on a brush and stone covered 20-acre plot in Nebraska, what could not be done here in your own state, where, it has been said, every county, without exception, is blessed with soil so rich that even though the population of the state increased several millions, all could be supported by intensive farming alone?

Intensive farming, to my mind, is one of the solutions for the problem of keeping the college trained man on the farm. After passing through a three, or perhaps four year's course at the agricultural school he has learned farming from a point where the brain is called upon for action just as much as is the physical man. He has learned to bring about results, not alone through strenuous manual labor, but through the application of the principles of science adapted to the tilling of the soil. He has learned to inquire into the why's and the wherefore's of his profession, to analyze the life and habits of both his animal and plant products and to seek out causes rather than be content with mere effects. Intensified farming, calling forth as it does every activity of the brain, cannot but appeal to the man who has trained his brain along that line, and as farming changes to a profession of the brain rather than a labor of the hand, the question of keeping the college man on the farm will find a ready answer.

One of the chief departments in organizing a great exposition is publicity. Probably this one department causes more anxiety and thought than any other. From what we have seen and heard of the journalists of Iowa, we are led to the conclusion that you are blessed with a great, energetic, untiring class of men, who are an honor to your commonwealth. In their personal contemplation we are reminded of the words of Henry Grady, who said:

"I have seen the field of journalism so enlarged, its possibilities so widened and its influence so extended, that I have come to believe earnestly that no man, no matter what his calling, his elevation, or his opportunity, can equal in dignity, honor or usefulness, the journalist who comprehends his position, measures his duties and gives himself entirely and unselfishly to his work. But journalism is a jealous profession and demands the fullest allegiance of those who seek its honors and emoluments. Least of all things can it be made the aid of a demagogue, or the handmaid of the politician. The man who uses his journal to subserve his political ambitions or writes with a sinister or personal purpose, soon loses his power and had best abandon a profession he has betrayed."

How true these prophetic words are to the journalists of the present. We endeavor to pay them a small pittance, and how small it really is, when we consider their increasing devotion to their state fair and exposition for which, in nine cases out of ten, they devote space for article after article to bring it to the attention of their readers without hope of reward other than that satisfaction experienced by each of us in the performance of some good deed well done.

From the poem read by Mr. W. B. Powell, of Pennsylvania, before the Farmers' Congress at Raleigh, N. C., last month, it seems as though he, in part, takes issue with my conclusion, as prior to the reading of the following "rhymelet" he stated that there were all kinds of editors, just as there were all kinds of men; for instance, he said there was the mean man, the very mean man, the devilishly mean man and the damned mean man:

"When Satan commenced his devilish work
Of cracking jokes and slinging dirt,
And punching folks in tender spot
With probes full long and sticks red hot,
He chose the printer as helping mate,
And linked his pen with fun and hate,
And to make it seem the more sublime
He oiled his tongue with wit and rhyme,
Then bade him drive his quill with might
And use his tongue throughout the fight,
So thus he has subdued the men
With printer's ink and printers' pen.

"The printer loafs in easy chair;
He shirks from work; he shirks from care,
And makes his daughter mend his hose
And wife to patch his darned old clothes,
And son to feed the pigs and fowls,
While he sits round and growls and howls.

"He drives the quill and slings the ink,
And gives to each a sage-like wink,
And makes you think he has a think,
And for each think he wants a drink.

"By ways so grand and thoughts so wise,
You'd judge he'd dropped from out the skies,
And brought with him from Angels' wings,
The quills which pen such wondrous things.

"He bears for each a ponderous load;
He's like the guide board by the road,
Which points to all the proper way,
While he himself doth go astray.

"He wisely says that we should keep
Our gardens stocked with rooting sheep,
And save the best of wether lambs,
From which to raise hydraulic rams.

"He tells us how to grow great crops,
By planting kangaroos for hops,
And seed to sow for growing silk—
The cows which give the buttermilk.

"To us poor fools he wisely tells,
Pumpkins are pumped from deepest wells;
He tells us things that we don't know;
Why roosters roost and crows don't crow.

"He tells us not to trust to luck
When growing apes for garden truck,
And that the wise forever seeks
The oldest roofs for growing leaks.

"Though he has faults when driving quill,
But with his faults we love him still;
He is our brother and our friend
And ever loyal to the end.

"He drives dull thoughts and cares away
And teaches us the proper way
To help mankind in every strife,
And live aright a proper life.

He walks with us long paths of truth,
And guides the old and leads the youth
To fairest realms beneath the sky,
Where wisdom's fount is never dry.

"He stands for right and fights a wrong,
And helps the weak and makes them strong,
And with his pen by his command
He holds at bay oppressions hand.
He stands for justice and for right,
And acts as leader in the fight;
By use of ink and with his pen,
He fights the devil in his den.

"He leads our thoughts to higher planes
And teaches us to use our brains
For your, and mine and others' good,
And how to live, as live we should.

"When stop the rolling wheels of time
And when the sun shall cease to shine,
And the celestial trump shall sound.
And hill and dale and all resound.

"When every family, tribe and race
And all shall take their given place,
When on the golden shores we meet,
And kindred shall their kindred greet,
When round the holy throne of Love
We gather in the courts above—
Then may the Recording Angel say,
The Printer true shall lead the way."

We would urge upon you the advisibility of keeping your fairs clean. There are plenty of good attractions, which educate and afford innocent amusement, without the vicious influence so often inculcated in the immature minds of the young people by immoral, indecent shows, which in the past, have obtained space on our county and state fair grounds. Cut out gambling in all its stages; we do not believe the small pittance received from a gambling concession measures up in money advantage for the harm done your patrons. Whenever an unsophisticated country youth is fleeced by a gambler on your grounds, under a concession granted for a money consideration, you are a party to the fraud, and I hope to see the day when every fair in Iowa and Nebraska will realize that lasting success cannot be secured with money received from such sources.

Greatness comes from opportunity, coupled with ability to properly care for its requirements. That the Iowa fair and exposition is one of the greatest in the United States, is perfectly logical, for Iowa and surrounding states touching its borders raise more than two-fifths of all the corn raised in the United States, one-fourth of all the horses, one-third of the cattle and two-fifths of the swine. No other commonwealth can make such a showing of opportunity, and this, coupled with the ability of the class of men handling the Iowa State Fair and Exposition, easily explains why your annual show is the greatest of any state in the union.

Mr. President: We will next listen to an address from Mr. James Atkinson, editor of "The Homestead," on "Iowa's Duty to Her State Fair and Exposition."

IOWA'S DUTY TO HER STATE FAIR AND EXPOSITION.

BY JAMES ATKINSON, EDITOR HOMESTEAD, DES MOINES.

The great success of the Iowa State Fair during recent years as compared with its former record is largely due to the fact that it has been appealing more and more to the people of the state in its true light, namely, as an educational institution. It is just as much a part of the state's educational system as the State University, the Teacher's College, or the Iowa College of Agriculture and Mechanic Arts. The notion that it is a Des Moines entertainment proposition no longer prevails among intelligent people and the fact that that conception of the fair has been lived down paves the way, in my opinion, for a period of signal usefulness during the coming years.

It is gratifying to know that Iowa has more acres in her fair grounds than any other state in the union; therefore, furnishing ample room for expansion, although we are surpassed by three or four other states in the value of the equipment on the grounds. Iowa people in their private capacity are more liberal than the state legislature in this regard, because the receipts of the state fair that come from admissions to the outside gate, the grandstand, and concessions make a grand total exceeded only by one other state in the union, that of Minnesota. In a single year the people who attend the Iowa State Fair pay into its treasury approximately as much as the fair has cost the state since it was established. So great is the educational influence of the fair that it is my opinion the state could afford to appropriate for permanent improvements dollar for dollar on the basis of the annual receipts. If this policy could be carried out for a few years it would touch the state's agriculture in its most vital spot, by increasing production and manufacturing and by greatly developing trade in general. Great as the record of the Iowa State Fair is, it is only in its infancy and no man present can realize its future possibilities.

In the Province of Ontario, where agricultural conditions are not nearly so favorable as in Iowa, the attendance this year at the Provincial Fair at Toronto, was between 700,000 and 800,000 people. The people there are educated fair goers and in the main they attend with a clearly defined purpose in mind. They go to study the standards in the live stock departments, to ascertain what is new concerning the production of grain and grasses, to witness the actual performance of labor saving devices, and incidentally to be entertained. Fair attendance in the province while not regarded as a patriotic duty is, nevertheless, looked on as the best possible means of keeping up-to-date in agricultural matters and parents almost regard it as a solemn duty to educate the growing boys and girls into the fair going habit. Part of the responsibility for this state of affairs, however, is due to the exceedingly low rates made by the railroads during the fair period. I have many, many times traveled to and from the Toronto fair at a railroad rate considerably less than one cent per mile. The fact that the average yield per acre of small grain in the Province of Ontario is rapidly increasing from year to year I attribute largely to the educational influence of the great Provincial Fair.

While it is desired that the Iowa State Fair should always attract exhibits from other states it is, nevertheless true that we should more and more encourage our own people to take part as exhibitors. The practice of offering special premiums for Iowa animals is to be commended and it would not be surprising if, in the future, it were necessary to establish what might be called amateur classes for those who have never taken part before. While the professional showman must be encouraged yet the way must be made easy for beginners.

The greatest problem that confronts the fair managers is to exhibit products of the farm such as grains and grasses in such a way as to make them educational. This department is apt to be stereotyped with entries largely drawn from what might be called the professional exhibitor. The plan put into operation by the Iowa fair in 1909 to place this department on a higher educational basis should be encouraged to the greatest possible extent. I refer especially to the exhibit and fine display made by the Iowa College of Agriculture. A very keen interest was shown in the soils, grains and grasses, in the weeds, as well as in the Farm Mechanic's display made by that institution. This leads me to say that I can see great possibilities for that side of the fair as it works in co-operation with the agricultural college. It seems to me that the college might be able to get every county in the state interested enough in the proposition to put on an exhibit from their county farm, showing the varities that are best adapted to each locality, and exhibiting the results of the application of up-to-date methods in production. We need to make that department of the fair a place where men can study the nature and character of the crops that are especially adapted to their own locality and I believe that every county can afford to co-operate with the fair management in order to bring that about. We are in a measure passing through a transitory stage in our agriculture because our people are just beginning to realize that while land has doubled and trebled in value, production with the acre as a unit, has not increased one iota. As a natural result farmers are trying to get hold of new and improved varieties and in some instances they literally grasp at straws. It would not be difficult to point out where mistakes have been made by hundreds and even thousands of our people in getting a variety of corn not acclimated to local condition, or varieties of oats and wheat not suited to the soil and climate. If each county could utilize its county farm to test out and develop varieties, and if in turn an educational exhibit showing the results could be made at the state fair an immense amount of good would be accomplished.

The people of Iowa should insist that their fair in the future should, even more than in the past, advertise the state. Indeed this is a matter that should be made the subject of special appropriation. The western states are pouring millions into advertising and as a result of this many of our best people are seeking homes in newer regions where conditions of living are in no way comparable with what they are in Iowa and where problems of production are much more complex.

We need to give more encouragement to the manufacturing interests of the state. Almost everything that Iowa makes, as well as every manufactured thing that her people use, ought to be on exhibition, but this can only be accomplished when space has been provided under cover for such exhibits. As Iowa will always furnish a splendid market for manufactured articles of all kinds, the state can well afford to encourage her own people to develop as much as possible the manufacturing industry. Our greatest market for farm products is our home market and the more people we can keep engaged in industries other than agriculture the better will our market be. I am just as strongly in favor of the state erecting a suitable manufacturer's building as I was in former years about the erection of a judging amphitheater and swine pavilion.

There is one branch of agriculture that seemingly has never been viewed by the people of Iowa in its proper light. I refer to the industry of sheep raising. I merely bring the matter up with no thought whatever of suggesting ways or means of putting any life into that industry, but according to my view, if the fair officials set about it they could formulate some plan to encourage farmers in general to keep sheep. We need them because they can convert grain and roughage into meat cheaper than any other farm animal, and we need them to free our farms from weeds. We could handle a million or even two million more sheep in the state and never miss what they would eat, and their presence on the farms of the state would greatly change the apparance of our pastures. I merely suggest the idea of doing somthing out of the ordinary to encourage the growth of that important industry.

I believe it is the duty of the people of Iowa through the medium of the state fair to greatly encourage the growth and production of leguminous crops. The exhibit of alfalfa made last fall furnished one of the most educational features of the whole fair. Not only should the growing of alfalfa be encouraged more and more, but the great king of legumes for Iowa conditions, namely the common red clover, should be duly advertised and duly eulogized to the end that the area of this crop seeded annually should be vastly increased. We have a certain school of scientists who are teaching that because the product of an acre in the form of corn furnishes so much more food for the human race than when the same product is converted into meat that because of this stock raising cannot be indefinitely relied upon as a means of maintaining the fertility supply. These scientists hold that this must be done through the medium of rotating crops in which legumes take an important part. For my own part I think that live stock raising should be encouraged to the greatest possible extent, and I believe that this policy will be a wise one for Iowa farmers to adopt, during the present generation at least, but I strongly endorse the importance attached to the growing of legumes by the aforesaid school of scientists.

The state fair would be the most appropriate place to show the effect on production of one legume crop grown at an interval of four or five years. We need to demonstrate that there is no excuse under our conditions for a bare stubble field between the period of the harvest and the time when the ground freezes up, because, as a matter of fact, even with the price of clover seed as high as it was in 1908 the increase in the following crop that results from plowing under even a six month's growth of clover will many times over pay for the cost of seed.

It is the duty of the people of the state directly or through the appropriations made by the legislature to make special effort to educate those who adopt progressive ideas slowly to the importance of legume growing. It would be no experiment of which the outcome could be doubtful. In the older countries where agriculture has been carried on for centuries the yield per acre is increasing and indeed in England and Germany the yield has doubled in the last half century largely through the influence and effect of legumes. In soil productiveness no country in the world surpasses Italy. Live stock there is by no means common and consequently farm yard manure is not plentiful, but the enormous productive capacity of the soil is kept up largely by the growing of legumes. What can be done there can be done here and I believe it would be an important function of the fair to make special effort to increase the legume area in this state.

It is the duty of the Iowa people to make the state fair a place to demonstrate to the world the productive possibilities of our rich, black soil and the capabilities of an industrious people. The fair should furnish the one opportunity of the whole year where by concerted action we blow our own horn. It should be made the one occasion of the whole year when the daily tasks of a very large number of people can be set aside in order that business may be made a matter of pleasure, and that pleasure seeking for the time being may be made a matter of business.

Convention adjourned until 1:30 o'clock p. m.

AFTERNOON SESSION.

Convention met at 1:30 p. m. pursuant to adjournment, with President Cameron in the chair.

Mr. Cameron: The first thing on the program this afternoon will be the final summary of Iowa crops for the season of 1909, just completed in the office of the Iowa Weather and Crop Service, Dr. Geo. M. Chappel, Director.

(Note.—This report is published in full elsewhere in the Year Book.)

Mr. President: Next on the program is an address by the Governor of Iowa, and I take pleasure in presenting to you, Honorable B. F. Carroll.

ADDRESS.

GOVERNOR B. F. CARROLL.

Mr. Chairman, and Gentlemen of the Agricultural Convention: I hardly know what to say to you this afternoon. I certainly will not detain you a great while.

My view of the agricultural department of the state is broadening each year. I guess that is due to the fact that the department itself is broadening all the time. I have had more or less to do about it, or see about it, for ten or twelve or more years, and my judgment is that no eight days of the year are of more value to the agricultural interests of the state than the eight days which are devoted to the annual fair of our state. I think that practically everyone who comes to the fair comes with some definite idea as to what he wants to learn, or what he wants to study. It is absolutely impossible for any human being in eight days, or even eighty days or eight hundred days, to study all of the things that are brought to our state fair at any one of its sessions. We can see all of them, we can go by and look at them and get a general idea of them, but to get right into the merits of the things on exhibit, it is impossible to comprehend or study all of them in any reasonable amount of time. One thing that suggested itself to me impressively was a little incident which occurred at the last state fair. An attorney whom I have known for many years remarked, "I must leave the fair this evening; I have court matters to which I must attend tomorrow. I am here studying the question of horses. I operate a farm which is now occupied by a tenant and I am here studying horses." He said, "I can go to a certain barn and see Belgians, to another and see Percherons, to another and see Clydesdales, away from the fair, but I can come here and see every variety of animal that is bred and reared in our state." He said to me, "It is a most interesting thing." Now what is true of this man, I doubt not is true of a very large per cent of the people who come to the fair. Many go to the fair simply to see, and at that they are learning a good deal. The things which are shown there and which are brought to the attention of the people of our state are unsurpassed anywhere. And I am not now speaking of the farming communities of our state alone, because years ago the state fair of Iowa grew too large to be regarded simply as an agricultural fair. The influence of that fair touches every corner of the state. It is a great school to us. One man may not be able to come to the fair, one man may not be able to go to the agricultural college, but his neighbor comes, or goes to the school; he studies these things and then comes back and reports on them, talks about the new machinery, improvements that have been put on, etc., and the knowledge which he gains is communicated to and benefits his neighbors. Many men of our state bring stock here for no other purpose than to dispose of it. Nothing but good can come from that, because nothing but the best stock is brought here. Take hogs, for instance, where there are three thousand hogs on exhibit nothing but the best would be looked at or considered. I delight sometimes to think of the stock we used to have in our part of Iowa. It may be casting some reflections upon our part of the state to say that we were rather behind other parts of the state in abandoning the old idea of pasturing our stock in the woods, which, of course, meant somewhat inferior breeding; still, it is a pleasure to keep in mind the stock we used to have and then come here and compare it with the stock we now place on exhibition.

I don't think there is any opposition any more to our state fair. Some may be opposed to appropriations for buildings, etc., but I think the most of the people have come to see the benefits. Every day in the year, from the time the fair ends until the next fair begins, somebody is making preparations for it. It is that that brings us the greatest value. It is the fact that somebody is trying to bring up a steer that is a little better than his neighbors; that some boy is endeavoring to produce corn that will raise over that of some other boy; these efforts and excellence are the things that count.

I think we ought to begin to interest ourselves a little more than we have been doing in the question of diversification of industries. I have been looking at the apples down stairs, and I never knew before that apple stories were as big as fish stories. I am not going to tell them because I have some regard for what I say. It is marvelous, the profits that some of those men have made out of fruit in southwestern and eastern Iowa this year. If we can put on exhibit here in the capitol and at the fair something that will make men turn their attention to these things that will beat the world, we ought to do it. I saw there a trophy, "Open to the World"—and Iowa has it and deserves it. We should turn our attention to horticulture more than we have been doing. I am going to tell one of those stories: One man cleared last year, above expenses, $9,000.00 on thirty-eight acres of land, having an orchard sixteen years old. Now if that is true, why are we not doing more of that kind of work? Someone said to me that we ought to call our people together and begin to boost our fruit interests. Out in the state of Washington they have been holding meetings and lauding themselves in the state over the apple crops that have been produced. Iowa can beat Washington. We ought to be turning our attention to these things, and I am going to make a speech along horticultural lines some day when I get a chance in a gathering where I can do it. The possibilities of this state are unlimited. We ought to be working in that direction.

Your chairman has said I have always been a friend to your fair. I believe I am entitled to say that I have always been friendly to it. I hope you may be able to make all the improvements that are necessary to keep Iowa the best fair in the union. We are a conservative people in Iowa, but we are marching along just the same and making great advancement, and I don't know of anything that has made greater progress than the fair. I said at a little meeting the other day that I hoped to see the time when the weather could not spoil anything but the races—and I don't care if you fix it so that it will not spoil the races, for it takes a good horse to win a race, and while Iowa is engaged in breeding good horses she is not wasting her time. I hope and believe, Mr. President, that the state fair of 1910 will be better than that of 1909—and we never had a better one than in 1909. I expect to see this fair grow better and better each year, and I am thoroughly convinced that we shall not be disappointed.

The Committee on Credentials filed the following report, which was unanimously adopted:

REPORT OF COMMITTEE ON CREDENTIALS.

We, the Committee on Credentials, find that under the laws of Iowa the following delegates are entitled to a vote at the annual state agricultural convention. A delegate can have but one vote. Total number of votes seventy-nine.

Respectfully submitted,

John Ledgerwood,
J. W. Coverdale,
S. L. Watt,
Committee on Credentials.

LIST OF DELEGATES FOR THE AGRICULTURAL CONVENTION.

December 8, 1909.

COUNTY AND DISTRICT FAIR ASSOCIATIONS.

Bremer County Fair Association	D. A. Long, Waverly
Boone Driving Park and Fair Association	A. M. Burnside, Boone
Buena Vista County Agricultural Society	C. H. Wegerslev, Alta
Cass County Agricultural Society	E. F. Berg, Atlantic
Northern Iowa Agricultural Society	D. McArthur, Mason City
Chickasaw County Agricultural Society	G. M. Bigelow, New Hampton
Clinton District Fair Association	Carl J. Skinner, Clinton
Davis County Agricultural Society	W. P. Huffman, Bloomfield
Estherville Agricultural Society	Chas. C. Heer, Armstrong
Franklin County Agricultural Society	N. E. Ferris, Hampton
Guthrie County Agricultural Society	T. E. Grissel, Guthrie Center
Henry County Agricultural Society	T. F. Campbell, Mt. Pleasant
Williamsburg Pavilion and Fair Association	Millard Harrington, Williamsburg
Jasper County Agricultural Society	C. F. Sauerman, Colfax
What Cheer District Agricultural Society	F. H. Beeman, What Cheer
Kossuth County Agricultural Society	A. R. Corey, Wesley
Columbus Junction District Fair Association	T. H. Grubb, Columbus Junction
Madison County Agricultural Society	T. J. Hudson, Winterset
Lake Prairie District Agricultural Society	T. D. Tice, Pella
Marshall County Fair Association	J. B. Classen, Green Mountain
Monona County Fair Association	A. W. Burgess, Onawa
Monroe County Agricultural Society	J. T. Porter, Albia

Union District Agricultural Society, W. Liberty	J. C. Nichols, W. Liberty
O'Brien County Agricultural Society	J. B. Murphy, Sutherland
Big Four District Fair Association	J. P. Mullen, Fonda
Poweshiek County Central Agricultural Society	James Nowak, Malcom
Sac County Agricultural Society	S. L. Watt, Sac City
Shelby County Agricultural Society	L. H. Pickard, Harlan
Eldon Big Four Fair Association	D. A. Jay, Eldon
Forest City Park and Fair Association	J. L. Wheeler, Forest City
Wright County Agricultural Society	S. W. Nelson, Clarion

FARMERS' INSTITUTES.

Benton County	Fred McCulloch, Hartwick
Bremer County	H. A. McCaffree, Janesville
Buena Vista County	D. M. Johnston, Storm Lake
Calhoun County	Henry Parsons, Rockwell City
Clay County	B. F. Felt, Jr., Spencer
Clinton County	J. W. Coverdale, Elwood
Dallas County	O. L. Gray, Dallas Center
Decatur County	William Chrichton, Leon
Delaware County	R. J. Bixby, Edgewood
Dickinson County	J. F. Brett, Spirit Lake
Emmet County	H. W. Woods, Estherville
Franklin County	T. W. Purcell, Hampton
Guthrie County	M. G. Chapman, Bagley
Hancock County	William Zuehl, Britt
Ida County	C. F. Hood, Battle Creek
Jefferson County	J. P. Manatrey, Fairfield
Madison County	Carl Kelso, Winterset
Mitchell County	D. F. Sheehan, Osage
Monona County	W. C. Whiting, Whiting
O'Brien County	Alvin C. Potter, Paullina
Page County	Lenus Hagglund, Essex
Polk County	A. L. Plummer, Altoona
Ringgold County	Grant Stahl, Diagonal
Warren County	[illegible]

FROM COUNTIES WHERE NO FAIRS WERE REPORTED.

Clarke County	P. L. Fowler, Osceola
Dallas County	E. Vial, Adel
Decatur County	C. W. Huffman, Leon
Ida County	W. F. Hutton, Holstein
Polk County	Lew Burnett, Des Moines
Union County	W. W. Morrow, Afton
Washington County	D. J. Palmer, Washington
Woodbury County	Joe Morton, Sioux City

STATE BOARD OF AGRICULTURE.

EX-OFFICIO.

State Dairy Commissioner	H. R. Wright, Des Moines
State Veterinarian	P. O. Koto, Forest City

OFFICERS.

President	C. E. Cameron, Alta
Vice-President	W. C. Brown, Clarion
Secretary	J. C. Simpson, Des Moines
Treasurer	G. S. Gilbertson, Des Moines

DISTRICT MEMBERS.

First District	R. S. Johnston, Columbus Junction
Second District	C. W. Phillips, Maquoketa
Third District	E. M. Reeves, Waverly
Fourth District	E. J. Curtin, Decorah
Sixth District	T. C. Legoe, What Cheer
Seventh District	C. F. Curtiss, Ames
Eighth District	John Ledgerwood, Leon
Ninth District	M. McDonald, Bayard
Tenth District	O. A. Olson, Forest City
Eleventh District	H. L. Pike, Whiting

Mr. B. W. Crossley of the Iowa State College of Agriculture at this time gave a short address on the manner of collecting and displaying the exhibit of farm crops of the State of Iowa at the last State Fair.

Mr. President: Next will be the election of officers—a president, vice-president, and members of the board from the odd numbered congressional districts. I will appoint as tellers, C. W. Hoffman of Decatur county, James Nowak of Poweshiek county, and T. W. Purcell of Franklin county.

Vice-President W. C. Brown took the chair and called for nominations for president. Mr. Mullin of Pocahontas county, nominated Mr. C. E. Cameron to succeed himself, and moved if there were no other nominations that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Cameron. Motion prevailed. The secretary so cast the vote and Mr. Cameron was declared duly elected president of the State Board of Agriculture for the ensuing year.

Mr. President: Next will be the election of a vice-president; nominations are in order. Mr. Purcell of Franklin county nominated Mr. W. C. Brown of Wright county to succeed himself, and moved if there were no further nominations that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Brown. Motion prevailed. The secretary so cast the vote and Mr. Brown was declared duly elected vice-president of the State Board of Agriculture for the ensuing year.

Nominations for member of the board from the First District were next called for. D. J. Palmer of Washington county placed in nomination Mr. R. S. Johnston of Louisa county to succeed himself, and moved if there were no other nominations that nominations cease and the secretary be instructed to cast the entire vote of the convention for Mr. Johnston. Motion prevailed. The secretary so cast the vote and Mr. Johnston was declared duly elected member of the board from the First District for the ensuing two years.

Mr. R. J. Bixby of Delaware county nominated for member of the board from the Third District, Mr. E. M. Reeves of Bremer county to succeed himself, and moved if there were no other nominations that the rules be suspended and the secretary authorized to cast the entire vote of the convention for Mr. Reeves. Motion prevailed The secretary so cast the vote and Mr. Reeves was declared duly elected member of the board from the Third District for the ensuing two years.

For member of the board from the Fifth District, Mr. Fred McCulloch of Benton county nominated Mr. E. M. Wentworth of Marshall county; seconded by Mr. Ferris of Franklin county. Mr. McCulloch moved that the rules be suspended and the secretary be instructed to cast the entire vote for Mr. Wentworth. Motion prevailed. The secretary so cast the vote and Mr. Wentworth was declared duly elected member of the board from the Fifth District for the ensuing two years.

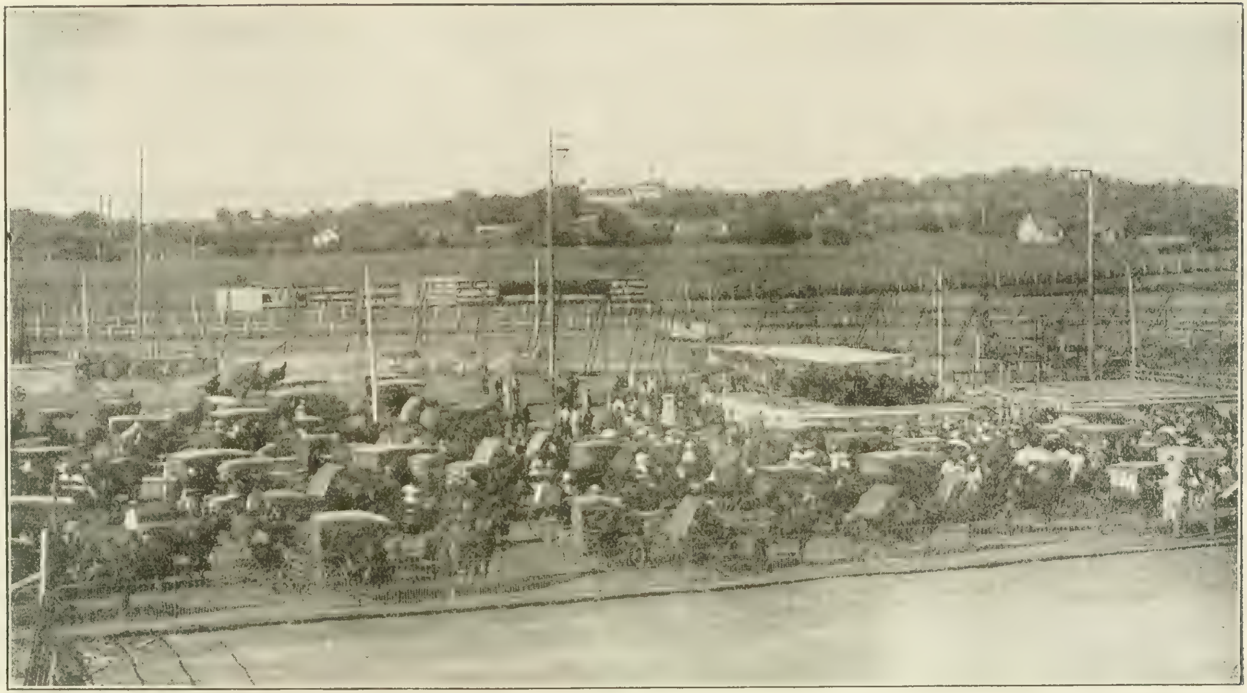
Mr. W. W. Morrow of Union county nominated Mr. C. F. Curtiss of Story county to succeed himself as member of the board from the Seventh District; seconded by Mr. Purcell. Mr. Morrow moved that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Curtiss. Motion prevailed. The secretary so cast the vote and Mr. Curtiss was declared elected member of the State Board of Agriculture from the Seventh District for the ensuing two years.

For member of the board from the Ninth District, Mr. Pickard of Harlan placed in nomination Mr. Chas. J. Escher, Jr., of Shelby county; and Mr. McDonald of Guthrie county nominated Mr. J. H. Wilson of Adair county. The roll was called by the secretary and the votes cast, and the tellers reported 54 votes for Mr. Escher and 24 for Mr. Wilson. Mr. McDonald moved that the election of Mr. Escher be made unanimous. Motion prevailed and Mr. Escher was declared duly elected member of the board from the Ninth District for the ensuing two years.

For member of the board from the Eleventh District, Mr. Morton. of Woodbury county nominated Mr. H. L. Pike of Monona county, the present incumbent. Mr. Morton moved if there were no other nominations that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Pike. Motion prevailed. The secretary so cast the vote and Mr. Pike was declared duly elected member of the board from the Eleventh District for the ensuing two years.

The Committee on Resolutions reported that they had no report to make.

On motion of Mr. Morrow, the convention adjourned.



Scene During Sunday Concert in Front of Grand Stand

PART VI.

SYPNOPIS OF PROCEEDINGS
OF
STATE BOARD OF AGRICULTURE
AND
COMMITTEE MEETINGS
1908

EXECUTIVE COMMITTEE MEETING.

December 16-17, 1908.

Executive committee met with President Cameron and Secretary Simpson present.

Mr. Cameron announced the following committees for the ensuing year.

AUDITING COMMITTEE.

C. W. Phillips
T. C. Legoe
R. S. Johnston

COMMITTEE ON RESOLUTIONS.

E. J. Curtin
M. McDonald
John Ledgerwood

COMMITTEE ON RULES.

C. E. Cameron
J. C. Simpson
C. F. Curtiss
R. S. Johnston
H. L. Pike

COMMITTEE OF ADULTERATION OF FOOD, SEEDS AND OTHER PRODUCTS.

S. B. Packard
C. F. Curtiss
H. R. Wright

COMMITTEE ON DAIRY INDUSTRY AND PRODUCTS, INCLUDING FRAUDULENT IMITATIONS THEREOF.

H. R. Wright
O. A. Olson
W. C. Brown

COMMITTEE ON CONTAGIOUS DISEASES AMONG DOMESTIC ANIMALS.

C. F. Curtiss **P. O. Koto** **E. M. Reeves** **H. L. Pike**

COMMITTEE ON REVISION OF LAWS AND NEW LAWS.

S. B. Packard **C. F. Curtiss** **H. R. Wright** **C. E. Cameron**
W. C. Brown **J. C. Simpson**

LEGISLATIVE COMMITTEE.

C. E. Cameron **J. C. Simpson** **W. C. Brown**
S. B. Packard **C. W. Phillips**

The next committee meeting was called for the week beginning January 4th to consult with the following persons with reference to work in connection with the fair: Prof. A. V. Storm, Superintendent of the school exhibit; E. J. Curtin, superintendent of the agricultural department, and others interested in revising rules and classification for that department; H. L. Pike, superintendent of sheep and poultry departments, to revise classification for poultry department and to consider improvements in the poultry building; A. L. Denio, superinendent of speed department, relative to program for 1909; and the committee on revision of laws.

IN VACATION.

The following warrants were issued in payment of bills filed:

Dec. 11, 1908—	
Warrant No. 6898 R. S. Johnston, expense attending stock show and meeting American Association Fairs and Expositions.....$	19.50
Warrant No. 6899 W. C. Brown, same......................	32.00
Warrant No. 6900 S. B. Packard, same......................	33.65
Warrant No. 6901 C. E. Cameron, same and executive committee meetings	63.60
Warrant No. 6902 J. C. Simpson, expense attending stock show and meeting American Association Fairs and Expositions....	24.00
Dec. 14, 1908—	
Warrant No. 6903 Roy Stuart, corn for fair grounds...........	24.58
Dec. 15, 1908—	
Warrant No. 6904 Jas. H. Deemer, superintendent of grounds, pay roll	323.25
Warrant No. 6905 A. H. Walker, balance on plumbing contract at administration building................................	97.54

Dec. 16, 1908—	
Warrant No. 6906 R. T. St. John, expense attending stock show and meeting American Association Fairs and Expositions, and special committee work	58.50
Warrant No. 6907 A. P. Sandles, expense attending agricultural convention	46.00
Dec. 19, 1908—	
Warrant No. 6908 Humphrey Jones, expenses attending State Farmers' Institute	50.00
Warrant No. 6909 W. A. Cochel, same	46.45
Warrant No. 6910 M. P. Ravenel, same	14.00
Dec. 21, 1908—	
Warrant No. 6911 C. E. Cameron, executive committe meeting and expense attending National Corn Show	33.53
Dec. 22, 1908—	
Warrant No. 6912 Drovers' Journal, subscription	4.00
Dec. 23, 1908—	
Warrant No. 6913 Fred Beech, moving vice-president's office	40.00
Dec. 26, 1908—	
Warrant No. 6914 J. B. McGorrisk, repair work on agricultural building and swine pavilion	92.05
Warrant No. 6915 J. B. McGorrisk, payment on contract, administration building	3,797.73
Dec. 30, 1908—	
Warrant No. 6916 Jas. H. Deemer, superintendent grounds, pay roll	274.75
Dec. 31, 1908—	
Warrant No. 6917 J. C. Simpson, services clerk and member executive committee	100.00
Warrant No. 6918 J. H. Deemer, superintendent of grounds, salary for December	83.33
Warrant No. 6919 A. R. Corey, salary for December	100.00
Jan. 4, 1909—	
Warrant No. 6920 William Foulk, bill for blacksmithing	5.50
Jan. 7, 1909—	
Warrant No. 6921 C. F. Curtiss, expense attending Indiana State Fair in 1908	12.70

EXECUTIVE COMMITTEE MEETING.

January 6-9, 1909.

Executive committee met with all members present, also member of the board E. J. Curtin.

On January 6th Mr. James Atkinson, editor of the Iowa Homestead, met with the committee and discussed with them the matter of collecting and making exhibits for the agricultural department. Mr. Simpson was instructed to call in Prof. B. W. Crossley, of the Farm Crops Department of the college at Ames to outline the best methods to pursue in collecting and making the exhibit and present same to the committee and Superintendent Curtin at the earliest possible date.

On the 7th and 8th the committee on revision of laws and new laws met, all members being present except Mr. Curtiss. The matter of repealing and enacting a new section with reference to agricultural and stock statistics was discussed, as was also the change to be made in the manner of filing reports from farmers' institutes. L. E. Wilson, secretary of the Greater Des Moines Committee, appeared before the committee and gave an excellent talk with reference to the bill for a bureau of publicity and advertising. The essential features to be incorporated in this and other bills were discussed quite freely and Mr. Simpson was instructed to have bills drawn and when ready to again call the committee to meet for the purpose of submitting same for their approval before presenting them to the legislature.

On the 9th H. L. Pike, member of the board, and A. L. Denio, superintendent of speed, met with the committee. The matter of revision of the classification in the poultry department was first considered. On invitation of Mr. Pike, superintendent of the poultry department, Mrs. Ashby of Des Moines and Prof. Pierce of Ames met with the committee. A complete revision of this departemnt prepared by Prof. Pierce was presented by Mr. Pike, the list containing all standard varieties of birds. The rules were revised and approved as they were to appear in the premium list for 1909.

Mr. Simpson presented a plan showing the proposed changes for the poultry building by the installation of a new system of cooping. The plan was approved by those present and the executive committee instructed Mr. Simpson to purchase the necessary coops as per plan presented.

The executive committee and Mr. Denio, superintendent of the speed department, discussed and arranged the program of races for the 1909 fair. (See premium list for 1909.)

The matter of the ice privilege for the fair of 1909 was discussed with the president of the Des Moines Ice Company. As no agreement could be reached it was decided to purchase from the company their ice house located on the fair grounds for $100.00, and Mr. Simpson was instructed to have the necessary amount of ice for use during the fair put up at the best terms possible.

A bill from Fred Pabst for $507.00 for expense of bringing his stable of horses to the 1908 fair was presented and ordered paid when approved by Superintendent C. F. Curtiss, with whom all arrangements had been made.

Warrants issued for bills paid in vacation were approved. Warrants were issued for per diem and mileage as follows:

Warrant No. 6922	E. J. Curtin	$28.80
Warrant No. 6923	S. B. Packard	15.80
Warrant No. 6925	C. E. Cameron	42.00
Warrant No. 6926	W. C. Brown	30.20
Warrant No. 6927	A. L. Denio	17.60

Other matters pertaining to the 1909 fair were discussed by the executive committee.

Committee adjourned.

COMBINED MEETING OF EXECUTIVE COMMITTEE AND COMMITTEE ON NOXIOUS WEEDS.

January 20-21, 1909.

Wednesday, January 20, 1909.

Committees met as per previous arrangement with the following members present: Cameron, Brown, Packard, Wright and Simpson.

On invitation of the committees there was also present Hon. B. W. Newberry of Strawberry Point, and Prof. L. H. Pammel of Ames.

The purpose of the meeting as stated was to consider and perfect the final draft of the bill for the destruction of noxious weeds. Senator J. H. Allen of Pocahontas and Representative E. C. Perkins of Delaware county who were to take charge of the bill in the representative branches of the legislature were called in to meet with the committees. The bill was read and considered section by section and agreed upon finally as shown in Senate File No. 71 and House File No. 83.

Thursday, January 21, 1909.

Committee met with the following members present: Cameron, Brown, Packard and Simpson.

The bonds of Secretary Simpson for $5,000 and Treasurer Gilbertson for $75,000.00 were approved and filed with the State Treasurer.

Mr. Packard offered the following resolution and moved its adoption:

The State Board of Agriculture of Iowa feels an extreme pride in the results of the labors of the Hon. James Wilson, Secretary of Agriculture, in the inestimable value to which his work in, and the growth of, the national Department of Agriculture has demonstrated his singular fitness for this work. The State Board of Agriculture believes its deep disappointment should this very capable cabinet minister be retired in the midst of his successful work would be in every sense shared by all the people connected in their avocations with the fertile soil of the United States.

Mr. Simpson was instructed to forward a signed copy of the above resolution to President-elect Taft and to Hon. James Wilson, Secretary of Agriculture.

Mr. Simpson presented a revised draft of bills for changes in the manner of filing reports by farmers' institutes, the transfer of stallion certificates, repealing and re-enacting Section 1363 of the Code relative to agricultural and live stock statistics, the change in the date of the annual agricultural convention from Wednesday to Thursday, changing and amending certain sections of the Code granting power to the department to issue bulletins, and increasing the support fund to $5,000.00 annually.

The plans and estimated cost of the proposed new amphitheater were received by the committee from architect O. O. Smith.

After a full discussion of the funds necessary to carry out the contemplated improvements at the fair grounds the following recommendation to be put into a bill and presented to the legislature now in session were agreed upon.

For steel and concrete amphitheater, removing track and barns..	$165,000
For completing swine show pavilion...........................	6,500
For additional land	15,000
Total	$186,500

Mr. Simpson presented a statement of the final settlement with contractor J. B. McGorrisk for the administration building, which was approved by the committee. (See claims on file.)

Warrants issued since the last meeting of the committee were approved as follows:

Warrant No. 6924	H. C. Wallace, share of reporting joint session of Corn Belt Meat Producers Association and State Farmers' Institute	$ 18.00
Warrant No. 6928	John Sundberg, judging corn, winter meeting.	19.30
Warrant No. 6929	Jas. H. Deemer, sup't grounds, pay roll	237.60

Warrants were drawn for per diem and mileage of present meeting as follows:

Warrant No. 6930	S. B. Packard	$17.80
Warrant No. 6931	C. E. Cameron	30.00
Warrant No. 6932	W. C. Brown	26.20

It was agreed that the committee meet in Minneapolis on Wednesday, January 27th, with the secretary of the amusement committee of the Minnesota State Fair, and Mr. Simpson was instructed to make such arrangements.

(Note.) At the meeting in Minneapolis it was agreed to hold a joint meeting of the amusement committee for the Iowa and Minesota State Fairs at the Grand Pacific hotel in Chicago on March 1-2 for the purpose of receiving propositions for free attractions and paid shows for the two state fairs.

IN VACATION.

January 22, 1909.

Warrant No. 6933 issued to Alex Galbraith & Son for remittance of fine imposed while exhibiting at the 1908 state fair.

January 23, 1909—

Warrant No. 6934 for $46.65 was issued in favor of E. T. Harlan in payment of bill for installation and care of the "Savage Bird Exhibit" at the 1908 state fair.

January 26, 1909.

Warrant No. 6935 for $10.66 issued to J. C. Simpson in payment of expenses for attending the National Corn Exposition at Omaha in December, 1908.

January 30, 1909.

The following warrants were issued in payment of services for the month of January, 1909:

No. 6936	J. H. Deemer, salary superintendent of grounds	$ 83.33
No. 6937	J. C. Simpson, extra services as member of executive committee	100.00
No. 6938	A. R. Corey, salary assistant secretary	100.00

MEETING OF COMMITTEE ON CONTAGIOUS DISEASES.

February 4-5, 1909.

A meeting of the Committee on Contagious Diseases Among Domestic Animals was held with the following members present: C. F. Curtiss, chairman, H. L. Pike and Elmer M. Reeves.

Chairman Curtiss presented a rough draft of a proposed bill for a sanitary board whose duty it would be to look after diseases among domestic animals. The proposed bill was considered by the committee, as well as by members of the Committee on Animal Husbandry of the House. The following bill was agreed upon:

A BILL.

For an act to establish a state live stock sanitary board of Iowa, and to provide for the control and suppression of dangerous, contagious or infectious diseases of domestic animals, and for the inspection of live stock imported into the state of Iowa for breeding, work, or dairy purposes.

Be it Enacted by the General Assembly of the State of Iowa:

Section 1. That a board is hereby established to be known as the State Live Stock Sanitary Board. This board shall consist of the President of the state department of agriculture, the dean of the division of veterinary medicine of the Iowa State College, the state veterinary surgeon, who shall be a competent and qualified person as provided in the act creating that office, and two additional members appointed by the governor, who shall be legal residents and qualified voters of the state of Iowa, and who shall be persons who are financially interested in the breeding and maintenance of domestic animals in the state of Iowa. One of the latter two members shall be appointed for a term of one year and one for a term of two years, the term of service in each case to begin May 1, 1909, and the successors of each shall serve for a term of two years thereafter and until their successors are appointed and qualified.

Sec. 2. That it shall be the duty of the state live stock sanitary board to protect the health of the domestic animals of the state; to determine and employ the most efficient and practical means for the prevention, suppression, control or eradication of dangerous, contagious or infectious diseases among the domestic animals; and for these purposes it is hereby authorized and empowered to establish, maintain, enforce and regulate such quarantine and other measures relating to the movements and care of animals and their products, the disinfection of suspected localities and articles, and the destruction of animals, as it may deem necessary; and to adopt, from time to time, all such regulations as may be necessary and proper for carrying out the purposes of this act.

Sec. 3. The said live stock sanitary board shall hold its first meeting at the state capitol on the first Tuesday in May, 1909. The members of the board shall take and subscribe to the oath of office required of other civil officers, and the board shall then organize by electing one of its members president and one vice-president, and the state veterinarian shall serve as the secretary and executive officer of the board. The board shall hold its meetings at the state capitol at such times as it may designate, but there shall not be to exceed four regular meetings each year, provided that the president of the board shall have power to call special meetings whenever in his judgment it becomes necessary. The members of the board, with the exception of the secretary and executive officer shall receive as compensation for their services the sum of five dollars per day for each day employed, and actual and necessary traveling expenses in attending the meetings of the board which sum shall be paid out of the state treasury upon vouchers of the board duly certified by the president and secretary thereof.

Sec. 4. The secretary and executive officer of the board shall receive an annual salary of $2,500 per year, to be paid from the state treasury, and before entering upon the duties of his office he shall give a bond to the state of Iowa, with good and sufficient surety, in the sum of five thousand dollars ($5,000), conditioned upon the proper discharge of said duties. He shall farthermore receive actual expenses necessarily incurred and paid by him in the discharge of his duties, and such amount shall be paid out of the fund appropriated for the work of the live stock sanitary board.

Sec. 5. The secretary and executive officer of the state live stock sanitary board shall act as state veterinarian and it shall be his duty to ascertain by personal examination or through reports from accredited representatives of said board and other reliable resources, all information which he can obtain regarding the existence of contagious, infectious and epidemic diseases of animals; to execute all orders, rules and regulations made by said live stock sanitary board and to present at the quarterly meetings of said board a detailed report of all matters connected with the work done by him or his subordinates during the quarter preceding said meeting.

Sec. 6. The dean of the division of veterinary medicine of the Iowa State college shall in addition to his duties as a member of this board, act as bacteriologist and consulting veterinarian to the said live stock sanitary board, and it shall be his duty to make or have made bacteriologic or pathologic examination of all diseased animals or portions thereof, or of such material as may be forwarded to him by said board or its duly authorized agents.

Sec. 7. All local boards of health shall assist the live stock sanitary board in the prevention, suppression, control and eradication of contagious and infectious diseases among domestic animals whenever requested so to do by the secretary or any member thereof. Two or more local boards may be required in emergencies to co-operate in rendering such assistance. When the rules of any local board conflict with those of the state board, the latter shall prevail.

Sec. 8. The state live stock sanitary board, and also the local boards of health within their respective jurisdictions, may quarantine or kill any domestic animal infected with, or which has been exposed to, any such diseases; but before killing any animal solely on the ground that it has been exposed, a local board shall procure the authority of the state board. Said boards may regulate or prohibit the arrival in and departure from the state, of animals so infected or exposed and in case of violation of any such regulation or prohibition, may detain any animal at its owner's cost. The state board may regulate or prohibit the bringing of domestic animals into the state, which, in its opinion, for any reason may injure the health of live stock therein. All rules and regulations adopted by the state board or by any local boards under authority of this act shall be recorded in its minutes and one week's published notice thereof shall be given by publication of said rules and regulations of the state board in the Register and Leader and the Des Moines Daily Capital, papers published in Des Moines, Iowa, and the rules and regulations of the local boards shall be published in the official papers of the counties in which the several boards are located.

Sec. 9. Every person who knows or has reasons to believe that an epidemic or an actively contagious or infectious disease exists in any domestic animal or herd of domestic animals, shall immediately notify the local board of health, or the township trustees of the township in which said disease exists; within twenty-four hours after such local board of health or such township trustees have been notified, or have received knowledge that such a disease exists, they shall give written notice thereof to the state board, and its executive officer shall, if he thinks necessary to protect the interests of the public, visit the locality where the disease exists and take such measures under the rules and regulations laid down by the state board, as may be necessary to restrict the spread of the disease and protect the public from its ravages. Said board or any member or authorized agent thereof may examine under oath all persons believed to have knowledge of the existence of disease among domestic animals, and for this purpose may take depositions and compel witnesses to attend and testify.

Sec. 10. The state live stock sanitary board shall have full authority to cause the prompt destruction of any horses, mules or asses affected with glanders; but before causing such destruction the animals infected shall be examined by the state veterinary surgeon and by one other competent veterinary surgeon appointed by the state live stock sanitary board. Every owner or person having care and control of a horse or other animal having the glanders who shall knowingly permit such animal to run at large or be driven upon any highway, or who shall sell or in any manner dispose of the same to any other person, and every keeper of a public barn who shall knowingly permit any horse or other animal having such disease to be stabled in such barn, shall be guilty of a misdemeanor and be punished by a fine of not less than twenty-five dollars ($25.00), or by imprisonment in the county jail for not less than ten days or more than ninety days.

Sec. 11. Every city or incorporated town in the state of Iowa shall have the power to prescribe regulations governing the sale of milk and meat and all dairy and meat products within the incorporated territory of such city or town. Said regulations may prohibit the sale of all milk and dairy products from herds which have not been subjected to the tuberculin test and found free from tuberculosis within the period of one year. In carrying out such regulations the authorities of incorporated cities and towns, or the owners of dairy herds furnishing milk or dairy products thereto, may call upon the state live stock board for an inspection and testing of herds and domestic animals, and dairy products and meat products, in accordance with the provisions of this act. The owner of a herd of cattle who desires to sell milk within the incorporated territory of such city or town as established requirements that cows furnishing milk to be sold therein shall first be tested by the tuberculin test, may apply to the state live stock sanitary board for examination of his herd. Said application shall be in writing upon a blank form provided by said board, and shall include an agreement on the part of the owner or owners of the herd, to disinfect his premises should diseased cattle be found, to reconstruct the barns, sheds and stables in which said cattle are sheltered, in accordance with the regulations of the board, and to follow the instructions of said board designated to prevent the reinfection of the herd and to suppress the disease or prevent the spread thereof. As soon as practicable after receiving such application filled out in proper manner the state live stock sanitary board shall cause the herd in question to be examined. If, after such an examination tubercular animals are found therein the said board shall have authority to take such animals and make such disposition of them as it considers most economical. Before being removed from the premises of the owner there shall be appointed three competent and disinterested men, one appointed by the state board, one by the owner and the third by the first two, to appraise such animals at their cash value. Such appraisal shall in no case exceed thirty-five dollars ($35.00) for a cow, except in the case of pure bred cattle where the pedigree shall be proved by certificate of registry from the herd books where registered, and in that case the maximum appraisal shall not exceed seventy-five dollars ($75.00). The state live stock sanitary board shall dispose of such animal to the best advantage and with the least possible loss. If upon slaughter such animal is found by the inspector in charge to be free from contagious or infectious diseases, then the full amount of such appraisal shall, when properly certified by the president and secretary of the state live stock sanitary board, be paid to the owner of such animal from any funds of the state treasury not otherwise appropriated. But if upon post-mortem examination such animal shall be found to be affected with contagious or infectious disease, then and in that case three-fourths of the appraised value shall be paid, provided the animal has been kept for one year in good faith in the state prior to the killing thereof, and provided that if the state board receives from the sale of the carcass of said animal a greater sum than the maximum amount appraised, the owner of the animal shall receive the full amount received by the state board for said animal. All incorporated cities and towns shall have the power to erect city abattoirs and require that all meat, and meat products sold or offered for sale within the incorporated limits of that city, unless killed at a place where government inspection is maintained, shall be killed in the city abattoir and subjected to inspections under such regulations as the state live stock sanitary board may prescribe.

Sec. 12. Owners of dairy herds who desire to have their herds examined and tested with a view to detecting the presence of any contagious disease, and with a further view of freeing their herds from such disease, may apply to the state board for such testing and examination. A blank for such application shall be furnished by the state board and shall include an agreement on the part of the person making said application that he will conform to and abide by the rules and regulations laid down by said board with regard to the testing and disposition of any diseased animals, the arrangement of the barns and stables and sheds in which such animals are sheltered, and disinfection of same, and the introduction of other animals into the herd after such test has been made. Upon receiving such application the board shall, as soon as practicable, cause such test or an examination to be made, and shall reimburse said applicants for diseased animals as provided in the foregoing sections.

Owners of pure bred cattle whether dairy or beef cattle may make similar application. The maximum appraisal of pure bred cattle shall not exceed seventy-five dollars ($75.00) per head, as heretofore provided.

If after examinations an animal is, in the judgment of the officer or agent of the state live stock sanitary board making the examination, suffering from tuberculosis, such animal shall be slaughtered under the provisions of this act, or, if the board deems that a due regard for the public health warrants it, said board may enter into a written agreement with the owner, subject to such conditions as the board may prescribe, for the separation and quarantine of such diseased animal or animals. Subject to the regulations of the state live stock sanitary board, such diseased animal or animals may continue to be used for breeding purposes. When the state live stock sanitary board deems that conditions warrant it, said board may make and issue to such owner a certificate that upon such examination such herd was found free from tuberculosis or that the owner has complied with the provisions of this section by causing all affected animals to be separated from the herd and quarantined as provided herein subject to the regulations of the state live stock sanitary board.

When voluntary application has been made to the said board for the testing of either dairy or pure bred herds, as provided in this section, the party making the application shall agree to pay all expenses of said test or examination except the remuneration of the veterinarian making said test or examination.

Sec. 13. The expense of killing and burial or destruction of a diseased animal, when the killing was ordered by any board, and done locally, shall be borne by the town or incorporated place where the animal was kept. The expense of quarantine, when the animal is taken from the possession of its owner, shall be defrayed, four-fifths by the state and one-fifth by the town or place. When such quarantined animal is left upon the premises of its owner or keeper, he shall bear the expense. When an animal is quarantined while being shipped into the state, the expense shall be borne by the owner or keeper. Whenever the owner or keeper of an animal becomes liable for an expense incurred by any board under this act, the board shall have a lien on such animal therefor, and may also maintain action for the animal.

Sec. 14. During the prevalence among domestic animals of any of the diseases referred to in this chapter, any owner or keeper of such animals may post upon the premises a notice forbidding all persons to enter any building or inclosure thereon in which animals are kept; and thereafter no person shall so enter, except a member or agent of the state board or of a local board of health. If the disease for which the animal is quarantined be a highly contagious disease, the owner or attendant in charge of said animal or animals shall be subject to the regulations of the state live stock sanitary board in leaving the premises where such quarantine is maintained. Every person violating any of the provisions of this chapter, or any rule or regulation made hereunder by the state board or any local board of health, or any order made by either under the authority of this chapter, shall be guilty of a misdemeanor, the minimum punishment whereof shall be a fine of twenty-five dollars; or imprisonment for thirty days. Any member of a local board who shall neglect or refuse to enforce the rules and regulations of a local board made thereunder shall be guilty of a misdemeanor, the minimum punishment thereof shall be a fine of $25; and each day's neglect or refusal to perform any duty imposed upon him under this chapter, shall constitute a separate and distinct offense.

Sec. 15. Every person who shall wilfully oppose or obstruct a health officer or physician charged with the enforcement of the health laws, in performing any legal duty, shall be guilty of a misdemeanor.

Sec. 16. Every owner or person in charge of sheep, who shall import or drive into the state, or who shall turn out or suffer to run at large, upon any highway or uninclosed lands, or upon any lands adjoining inclosed lands, occupied by any person for pasturing sheep, any sheep having any contagious disease, or who shall sell, let or dispose of any such sheep, knowing them to be diseased, without first apprising the purchaser or person taking them of such disease, shall be guilty of a gross misdemeanor and punished by a fine of not less than fifty dollars nor more than two hundred dollars.

Sec. 17. Every person owning or having in charge any domestic animal or carcass of an animal that has died or been killed on account of disease shall dispose of the carcass in the manner provided by the rules and regulations prescribed by the state live stock sanitary board. No person shall sell, or offer to sell or give away any carcass of any animal which has been killed or died on account of disease, nor convey the same along any public road or upon any land not his own. Nor shall any person negligently or wilfully permit diseased animals, controlled or owned by him to escape his control or to run at large. Every violation of any provision of this section shall be a misdemeanor.

Sec. 18. Every owner or person having charge of any animal, knowing the same to have any infectious or contagious disease, or to have recently been exposed thereto, who shall sell or barter the same, or knowingly permit such animal to run at large or come into contact with any other animal, or with another person without his knowledge and permission, shall be punished by imprisonment in the county jail for not more than thirty days, or by a fine of not less than twenty dollars nor more than one hundred dollars, and the seller of such animal under the conditions stated shall be liable to the purchaser to the extent of the purchase price.

Sec. 19. The live stock sanitary board or any member thereof, or any of their duly authorized agents, shall at all times have the right to enter any premises, farm, fields, pens, abattoirs, slaughter houses, buildings, cars or vessels where any domestic animal is at the time quartered, or wherever the carcass of one may be for the purpose of examining it in any way that may be necessary to determine whether they are or were the subjects of any contagious or infectious diseases.

Sec. 20. The state live stock sanitary board is hereby empowered to appoint and employ such assistants and agents and fix the compensation thereof at not to exceed five dollars per day and actual and necessary expenses, and to purchase such supplies and materials as may be necessary in carrying out the provisions of this act; and the board and the members thereof are hereby empowered to administer oats or affirmations to the appraisers appointed under this act, that they may order and conduct such examinations into the condition of live stock of the state in relation to contagious diseases, including milk supplies of cities and towns, boroughs and villages, as may seem necessary, and to take proper measures to protect such milk supplies from contamination.

Sec. 21. That it shall be unlawful for any transportation company to bring into the state of Iowa any horses mules, asses, cattle, sheep or swine, for work, breeding or dairy purposes, unless such animals have been examined and found free from the following contagious diseases, to-wit: Glanders, farcy, tuberculosis, hog cholera, scabies, maladie du coit, or any other contagious or infectious disease, which freedom from disease shall be established by a certificate of health signed by a state veterinarian or assistant state veterinarian acting under the order or discretion of the live stock sanitary board of this state, or of the state live stock sanitary board of the state from which shipment is made.

The certificate of health and permit given by the above mentioned veterinarian shall be given in duplicate, the original of which shall be forwarded to the live stock sanitary board of Iowa, and the duplicate given to the railroad or transportation company to be attached to the bill of lading for said animals; provided, that in the case of cattle over six months of age, to be used for breeding or dairy purposes, the non-existence of tuberculosis shall have been determined by the tuberculin test within thirty days preceding such importation, and certified by the veterinarian issuing the above mentioned certificate of health and permit. The tuberculin test shall not be demanded for cattle intended for exhibition at town, county, district or state fairs.

Sec. 22. That in any case where the inspection certificate is required in the preceding section has not been obtained, transportation companies shall notify the live stock sanitary board and shall hold such animals at the first station within Iowa where suitable facilities for holding animals for inspection by the live stock sanitary board, such inspection to be made at the expense of the owner.

Sec. 23. When cattle that have reacted to the tuberculin test, when applied by the state live stock sanitary board or any of its agents, or when applied by any competent veterinarian legally authorized to practice in Iowa, or when any lot of hogs pronounced infected with swine plague or hog cholera by such competent veterinarian, are shipped to market, or for slaughter or elsewhere, it shall be unlawful for any transportation company that has transported such reacting or diseased animals to again use any car or cars in which such reacting or diseased animals were shipped to any resident of Iowa for the shipment of other domestic animals of any kind until such car or cars have been thoroughly cleaned and disinfected in accordance with the rules and regulations prescribed by the state live stock sanitary board.

Sec. 24. Any transportation company, corporation or agent thereof, violating any of the provisions of this act, shall be guilty of a gross misdemeanor, and upon conviction thereof shall be fined for each offense not less than five hundred dollars ($500.00), nor more than one thousand dollars ($1,000), or be imprisoned for not more than one year.

Such transportation company, corporation or agent shall be liable in a civil action to any person injured for the full amount of the damages that may result from the violation of this act. Action may be brought in any county in the state in which said cattle are sold, offered for sale or delivered to purchaser, or anywhere they may be detained in transit.

Sec. 25. As soon as practicable after its organization the state live stock sanitary board shall inaugurate plans for a systematic campaign of education for the purposes of disseminating information among the people of the state with regard to diseases of animals, and especially tuberculosis, and to this end shall arrange for lectures to be given by competent persons before farmers' institutes, meetings arranged by local boards of health and other organizations, and shall prepare for general distribution pamphlets containing information with regard to tuberculosis and other diseases, and the manner in which they are disseminated and the effect upon public health. For this specific purpose the sum of ten thousand dollars ($10,000) is hereby appropriated to be used, or as much thereof as may be necessary, during the first biennial period.

Sec. 26. There is hereby appropriated out of any funds of the state treasury not otherwise appropriated the sum of twenty-five thousand dollars ($25,000) annually hereafter for carrying on the work and meeting the necessary expenses of the state live stock sanitary board.

Sec. 27. All provisions of the code and all acts or parts of acts inconsistent or in conflict with the provisions of this act, including the annual appropriation of seven thousand, five hundred dollars ($7,500) for the work and expenses of the state veterinary surgeon, are hereby repealed.

Warrants were issued for per diem and mileage as follows:

No. 6939	H. L. Pike (claims No. 6866-6869)	$64.00
No. 6940	Elmer M. Reeves (claim No. 6668)	24.30

IN VACATION.

February 5, 1909.

Warrant No. 6941 for $4.00 was issued to the Billboard Publishing Company of Cincinnati, Ohio, in payment of subscription for The Billboard for ensuing year.

Also warrant No. 6942 for $28.50 issued to W. C. Brown in payment of per diem and mileage for attending to work in connection with the privilege and concessions for the 1909 state fair.

EXECUTIVE COMMITTEE MEETING.

February 9-11, 1909.

Committee met as per previous arrangement with all members present.

The following report was received from Mr. Kirkpatrick with reference to landscaping and having made a permanent plan of the grounds.

Mr. J. C. Simpson, Secretary State Board of Agriculture.

Dear Sir:—I am submitting to you at this time the map and tracing of the fair grounds prepared for you some weeks ago.

In the scheme we have endeavored to embody a number of your suggestions regarding the arrangement of buildings and drives. Further, we have presumed in some instances to incorporate a number of ideas of our own. We have done this where your instructions were inadequate.

realizing the character of the ground and the marvelous growth of the state fair, with its consequent crying needs for changes and expansion in its present site and equipment.

In the first place, we beg to say, as we have already stated on the plan, that this scheme is only tentative. A great deal of difficulty was experienced in basing the new plan on a previous map which a number of surveyor's check measurements showed to be only approximate in many instances.

In view of this fact, the proper and wise thing to do was to make a complete and thorough survey of the whole grounds, locating accurately all structures, trees and present plantings. The only reason this was not done was the understanding on our part that the amount of money to be expended on the plan was limited.

A ground of the nature of the state fair ground should have some unified plan of treatment with respect to the setting and character of its buildings, as well as with regard to its plantings. To be frank, we find that it has no plan whatever. In the distant past a Chicago firm was employed to work out a plan for the grounds. This they executed quite admirably, using the unit plan, grouping the various exhibits in more or less segregated sections or departments. Even if this plan had been carefully followed out by those in authority, the following serious blunders were made by the designers. First, they failed to realize the magnitude to which an industrial and agricultural exposition of the nature of our state fair must attain in a commonwealth such as our own. The plan did not recognize the variety and abundance of exhibits which cheap and rapid transportation and unparalleled agricultural and industrial development in the Mississippi valley were to yearly mass upon the fair ground. In the second place, their plan called for numerous structures of a temporary nature, usually comparatively small. These were constructed quickly of lumber, with battened cracks. This style of building required constant repair and this, and the number required to house the various exhibits, combined with the prohibitive prices of lumber of late years, evidently caused a departure from this plan.

More pretentious buildings of more permanent character and capable of housing the increasing activities were introduced. This in itself was the perfectly natural thing and would have been a laudable thing to do had a definite plan of placing been devised. But the large Agricultural Hall was located at the foot of the western slope, and cut into the hill evidently with the aim of lowering it so that it could not possibly obstruct the view of the city from the temporary exposition building on the summit of the knoll to the east. The great crime in choosing its site, however, was made when the axis of the building was laid in a southwestern and northeastern direction. Being so placed, askew with the world, it destroyed any chance that might have been utilized to set all permanent buildings according to some related, unified scheme.

Next, the large stock pavilion was placed just to the south across Capitol Avenue from Agricultural Hall, undoubtedly because it was handy to the stock barns lying immediately in their various groups to the west, south and southeast of the proposed site. Another point that evidently influenced the locating committee was its proximity to Rock Island avenue, with the exception of Grand avenue, the most thronged thoroughfare of the grounds.

Then the animal industry outgrew the pavilion and the enormous, permanent steel and brick swine barns with their own pavilion were planned and placed on the same side of Rock Island avenue to the south, just across the roadway from the Rock Island depot. The vast importance of the swine industry of the state demanded its close proximity to the shipping and unloading facilities. As fate would have it, this secured the location of this mammoth building with its attendant stench, hubbub, and uproar in perhaps as ideal a place as could be found on the grounds.

About this time the association evidently awakened to the seriousness of locating large and permanent structures in a haphazard, helter-skelter fashion, and the attempt was made to preserve a portion of the ground lying west of Rock Island avenue and south of Capitol avenue as a sort of privilege area. At the same time, a sort of plan seems to have been evolved for locating the permanent buildings as a sort of rim about this roughly conceived idea. Perhaps this was not the best action that could have been taken, but it certainly was admirable when contrasted to the condition that had been obtaining. And, a further praiseworthy action was taken when the horse and cattle barns began to take on permanency of structure in answer to a well executed plan. I refer to the colony system of brick barns so arranged that when completed the roof shall cover the whole colony, placing under cover ample drives and courts to allow some showing of animals even in the stormiest and most inclement weather. The fact that the whole animal industry is grouped in a community, somewhat removed from the other activities of the fair, and yet so readily accessible to all, is certainly laudable.

Two things yet remain, however, to complete the community. As yet, the sheep are located in wholly inadequate, temporary tents and sheds, lying to the northeast of the swine barns. This should not be. The sheep industry in the state is growing rapidly. The showing of animals in this department annually has come to be second to none in the middle west. Permanent and ample quarters are demanded by it.

The logical position for the sheep barns is undoubtedly across Rock Island avenue west of the swine barns. But the space now available there is totally insufficient and it would seem advisable to secure a part or all of the Redhead tract adjoining the fair ground plot on the southwest, and it should be acquired if only to complete the symmetry of the grounds. If the whole tract were secured, the poultry exhibit might also be brought to this part of the exposition and suitable quarters provided for it close to shipping facilities. Evidently the present poultry building was designed and located when the sentiment held that poultry raising was strictly a woman's business and very closely related to domestic art. But this no longer holds true. Today the farmer reckons his profits from his chickens as well as from his hogs and corn. And his wife has been educated to see and recognize the good points in a porker, a horse, or a steer. Certainly these exhibits should not be separated by a quarter of a mile of hills and valleys. And, too, the removal of the poultry building from the camping region would undoubtedly make that part of the grounds more desirable to those concerned. The building might be well utilized as a rest building or as an exhibition place for schools and colleges and for junior arts and crafts work, etc.

It seems to be now the plan of the association to make the Administration building, lately erected just south of the present amphitheater facing in the four cardinal directions, the center of view as well as the executive headquarters of the fair. The plan is to retain vistas from its spacious verandas to every large building. This explains the treatment suggested on the map for the privilege grounds lying just south of the building. The drives projected are axes from the Administration building, and from Grand avenue respectively to the northern entrances to the horse barns.

To the west of the administration building is a space also to be used for privileges or preferably, for large and unwieldy machinery such as silos, fences, gates, cement products, etc. A little farther to the southwest the projected Machinery Hall will be seen with its axis lying on Capitol avenue. This retains a splendid view up the avenue to the Exposition building, the Iowa State College building, and the camping ground at the summit of the hill to the east. Such a mammoth structure could not but jar on artistic tastes if the axis were placed on either side of this line. The three wings on both the north and south have wide graveled drives, and wide entrances allowing the backing, turning, and unloading of large vans, and even of traction machinery itself. A drive has been installed completely around the building in order that machines may be put in or taken out at any wing with equal facility.

The arrangement of drives is only tentative, but some plan that embodies a loop of the entire exhibitional activity, it seems should be adopted. We have devised this drive, in the first place, in order to get a sort of belt line around the thronged part of the fair, and in the second place, that automobile and coaching parties may get a quick and satisfactory general view of the exposition. This roadway anticipates some little cutting and filling in the eastern part of its course. The drive angling from Grand Avenue to Capitol Avenue just before the Exposition building would need to be swung around down the hill and a fill of some five feet made just before it crosses Capitol Avenue, but the fill could easily be made with earth from cutting down near the present Christian Church cafe.

The Capitol Avenue entrance would be dispensed with and only the Grand Avenue and Rock Island Avenue entrances used with the exception of the street car entrance. An entrance to the north of Grand Avenue gate has also been devised to accomodate interurban passengers.

The street car tracks and waiting room are to be changed as indicated in the map. The entrances to accommodate the street car service are to consist of three batteries of turn stiles of five each, with exits at each place. This will allow the quicker loading and unloading of crowds, for the distance intervening will allow the loading of three cars, and their trailers if necessary, simultaneously.

The position of the race track is shown shifted to the north slightly in order to accommodate the new steel amphitheater, which is shown lying just south and between the track and Grand avenue. By shifting to the position indicated, and securing the Sims tract to the north of the present fair grounds, a mile of track could be installed, using the same starting place, judges' stand, and amphitheater as for the half mile. The greatest objection to doing this would be the enormous cutting into the hill which would be required. The hill rises very rapidly here and a cut of some thirty feet would be quite probable. The little creek at the west end would also need to be bridged.

To the east of the proposed amphitheater several building sites are shown. The locations at present are covered with makeshift machinery buildings, which would be removed upon the completion of Machinery Hall. These sites all have good views down upon the Administration building and the privilege grounds to the west and south of it. The horticulture, dairy and agricultural extension interests of the state are clamoring for room and these positions are suggested for them.

At the head of Rock Island Avenue the site is unusually good and commanding. Here an imposing building could be installed with one axis lying on the avenue and the other parlalel to Grand Avenue. The other sites are not so good, being somewhat too far removed from the center of activity. Further, the placing of a large permanent dining hall just to the east, with its back doors looking out upon this territory has very much decreased the value of the locations for building sites. This, however, could be partially remedied by screen planting along the creek.

A word regarding plantings. At present the association is expending large sums of money on beds and bedding plants and their upkeep. This is a serious mistake. These plantings are seen but a week or two during the whole year, and their cost is out of all proportion to the benefits derived from them. A much less sum of money expended in planting a well devised scheme of hardy schrubbery and trees would produce far more desirable results in every way.

The tree planting at present is very faulty in that it is not planned as to material or arrangement. Sending out gangs of day workmen with spades and stakes to set in incongruous and unrelated rows of box elders, cottonwoods, and soft maples can hardly be excused on a ground such as the one under consideration.

In view of these mistakes that are being made, and recognizing the fact that no adequate plan for the fair grounds is in existence, we earnestly recommend that a thoroughly competent, authoritative landscape architect be at once engaged to work out a definite and permanent plan for the treatment of the whole ground. We do this because the interest, attendance and magnitude of the fair are bound to grow yet for decades at least, and it behooves Iowa to house this greatest agricultural and industrial exposition in the middle west, and in some respects in the whole world, in a fitting manner. Awaiting your service, I am,

Yours very truly,

(Signed). K. A. KIRKPATRICK.

The bill presented by Mr. Kirkpatrick for services and expense in making preliminary sketches and report, amounting to $40.35, was presented and warrant ordered drawn in payment of same.

Secretary Simpson presented various matters petaining to the revision of the premium list for the 1909 fair, all of which were agreed upon as published in said list.

Members of the committee conversed with various members of the legislature with reference to the appropriations bill for further improvements at the grounds.

Warrants for per diem and mileage were issued as follows:

No. 6944	C. E. Cameron, executive committee meeting	$47.25
No. 6945	W. C. Brown, executive meeting	22.50

IN VACATION.

February 13, 1909.

Warrant No. 6946 for $2.00 was issued to the Russell's Railway Guide Company in payment for subscription for the Railway Guide for the ensuing year.

Also warrant No. 6948 for $4.50 issued to the Des Moines Daily News Company in payment of subscription on the Daily News for the past year.

Also warrant No. 6949 for $4.32 issued to J. D. Springer in payment for advertising the state fair of 1908 in the Times-Gazette of Eagle Grove, Iowa.

February 19, 1909.

Warrant No. 6950 for $6.00 was issued to the R. L. Polk Co. in payment of copy of the Des Moines City Directory.

SPECIAL COMMITTEE MEETING.

February 19-20, 1909.

The following members were present at the special committee meeting: R. S. Johnston, E. J. Curtin, C. E. Cameron and W. C. Brown.

Mr. Johnston, having been appointed superintendent of the swine department for the 1909 fair, conferred with Mr. Simpson relative to the special rules for the swine department and the best method to pursue in handling applications and making assignments for pens in said department.

Plans for making the educational exhibit of various farm crops at the Agricultural Department of the fair were discussed at length with Mr. Curtin, superintendent of that department; Mr. Simpson informing the members present of his conversation and meeting with Mr. B. W. Crossley of Ames, and his efforts to enlist his services in this work. As no definite answer had been received from Mr. Crossley as to whether he could take up the work, further consideration was deferred until a later date.

On Friday afternoon the committee met with a sub-committee from the appropriations committee from the House to whom had been referred the appropriation bill for additions and further improvements at the State Fair and Exposition Grounds. A visit to and a careful inspection of the grounds was made in company with the said committee.

Warants for per diem and mileage were issued as follows:

No. 6951	R. S. Johnston, special committee work	$27.80
No. 6952	W. C. Brown, special committee work	34.20
No. 6953	E. J. Curtin, special committee work	32.80
No. 6954	C. E. Cameron, special committe work	26.00

IN VACATION.

February 25, 1909.

Warrant No. 6955 for $4.00 issued to W. M. Clark, secretary, in payment of annual dues of the Iowa State Fair in the Iowa Association of Fair Managers.

February 26, 1909.

Warrant No. 6956 for $135.30 issued to Jas. H. Deemer, superintendent of fair grounds, in payment of pay roll.

Also the following warrants issued in payment of services for the month of February, 1909:

No. 6957	J. H. Deemer, salary, superintendent of fair ground	$ 83.33
No. 6958	A. R. Corey, salary, assistant secretary	100.00

Also warrant No. 6959 for $37.10 issued to J. C. Simpson in payment of expenses incurred on trip to Minneapolis and Chicago. (Claim No. 6660.)

Also warrant No. 6960 for $21.60 issued to W. E. Clark in payment of corn for fair grounds.

March 1, 1909.

Warrant No. 6961 for $10.00 issued to D. W. Barlow in payment for sawdust for ice houses at fair ground.

EXECUTIVE COMMITTEE MEETING.

February 28, March 1-2, 1909.

As per previous arrangement the Executive Committee and Member of the Board E. J. Curtin met with the officers and members of the Minnesota State Fair at the Grand Pacific Hotel, Chicago, for the purpose of receiving and considering propositions for attractions, paid shows, bands, etc., for the Iowa and Minnesota State Fairs.

Warrants were issued as follows to cover per diem and expenses attending said meeting:

No. 6963	C. E. Cameron (claim No. 6712)	$41,000
No. 6964	W. C. Brown, (claim No. 6714)	39.50

EXECUTIVE COMMITTEE MEETING.

March 4-5, 1909.

Executive committee met as per previous arrangements. On Thursday, March 4th, the members appeared before the Appropriations committee of the House and had a hearing upon House File No. 231, A bill for an act to appropriate one hundred eighty-six thousand five hundred dollars ($186,500) for improvements and additions to the State Fair and Exposition Grounds.

On Friday, March 5th, the members appeared before the Appropriations committee of the Senate on a similar errand.

Warrants for per diem and mileage were issued as follows:

No. 6963	C. E. Cameron, (claim No. 6713)	$26.00
No. 6964	W. C. Brown, (claim No. 6715)	22.20

IN VACATION.

March 4, 1909.

Warrant No. 6962 for $15.00 issued to H. F. Deets in payment for large timbers and jack screws. (Claim No. 6701.)

March 6, 1909.

Warrant No. 6965 for $4.80 issued to Thos. McCulla for 1908 State Fair advertising in the Cherokee Times. (Claim No. 6716.)

March 10, 1909.

Warrant No. 6966 for $41.40 issued to the Armstrong Press in payment for printing. (Claims No. 6624-25.)

March 19, 1909.

Warrants were issued in payment for the following claims, same having been approved by the Executive Committee:

No. 6967	J. C. Simpson, expenses incurred attending committee meeting in Chicago	$36.65
No. 6968	Backman Sheet Metal Works, (claim No. 6634)	44.80
No. 6969	Hawkeye Press Clipping Bureau, (claims No. 6607, 6640 and 6729)	20.00
No. 6970	J. E. Graff, rat biscuit for fair grounds, (claim No. 6648)	1.80
No. 6971	Jewett Lumber Co., (claim No. 6591)	2.50
No. 6972	J. T. Fredergill, for gravel, (claim No. 6626)	2.60
No. 6973	G. E. Deitz, cement, (claim No. 6638)	14.00
No. 6974	E. D. Chassel, binding award books, (claim No. 6642)	2.00
No. 6975	Ferguson Printing Co., printing, (claim No. 6605)	6.00
No. 6976	D. M. Rubber Stamp Works, (claim No. 6636)	.45
No. 6977	Perkins Electric Co., (claim No. 6637)	2.82
No. 6978	Ben Wolgar, blacksmithing, year 1908, (claim No. 6641)	43.50
No. 6979	Hawkeye Transfer Co., (claim No. 6592)	2.50
No. 6980	W. Burzacott, (claim No. 6777)	.25
No. 6981	Standard Glass & Paint Co., (claims No. 6677-6583)	37.18

EXECUTIVE COMMITTEE MEETING.

March 22-27, 1909.

Executive Committee met with C. E. Cameron and J. C. Simpson present.

The purpose of the meeting was to consult with the architect with reference to the plans and specifications for the proposed amphitheater, and to discuss other improvements necessary at the Fair Grounds for the year.

The legislature having amended the appropriation bill for improvements at the Fair Ground to $100,000 for amphitheatre and moving tracks and barns, the committee went over the plans with the architect and instructed him to prepare his form of proposal asking for bids as follows:

No. 1. For amphitheater complete as per first plans.
No. 2. For ten sections incompleted (omitting all brick work, mexanine story, cement flooring, doors, windows, etc.)
No. 3. Same as No. 2, except to be for eight sections.
No. 4. To be for six sections complete.

It was agreed that separate bids should be asked for the steel work, for the plumbing, for the general contract, and for the seating; general contract to cover everything except steel, plumbing and seats.

The details of the plans were studied quite carefully and the architect was instructed to make such alterations in the plans as agreed upon, and to go ahead to complete the plans and specifications and have same ready to ask for bids at the earliest moment.

Arrangements were made with Geo. Dobson, a civil engineer, to have the levels taken every fifty feet on that part of the grounds lying north of Grand Avenue from Thirtieth Street to the east end of the present track, and make a contour map of same; price agreed upon, $50.00.

President Cameron instructed the secretary to call a board meeting for Thursday and Friday, April 1-2.

Warrants for per diem and mileage was issued as follows: No. 6783, C. E. Cameron, $38.00.

IN VACATION.

March 26, 1909.

Warrant No. 6982 for $1.25 issued to L. Jackson for jaintor service at the State Fair of 1908.

March 30, 1909.

Warrant No. 6984 for $25.00 issued to J. L. Myerly, P. M., in payment for postage.

March 31, 1909.

The following warrants were issued in payment of salaries for March:

No. 6985	J. H. Deemer, superintendent of grounds, salary	$ 83.33
No. 6986	A. R. Corey, salary	100.00
No. 6987	Elsie Colton, salary	75.00

MEETING OF THE STATE BOARD OF AGRICULTURE.

April 1-2, 1909.

Thursday, April 1, 1909.

Board met at nine o'clock A. M. with President Cameron in the chair. Upon roll call the following members responded: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, Packard, Legoe, Curtiss, Ledgerwood, McDonald, Olson and Pike.

Minutes of the last session of the board in December and of the executive and special committee meetings in vacation were read and approved by the following resolution:

"RESOLVED, That the State Board in approving the minutes of the last meeting of the board, executive and special committee meetings and minutes in vacation, commends highly the careful manner in which the secretary has recorded in detail all and singular the transactions, financial and otherwise, in the journal of its proceedings pertaining to the Department of Agriculture for the period concerned."

The President informed the board of the final passage of House File No. 231 by the Thirty-third General Assembly, making appropriation for further improvements at the State Fair and Exposition Grounds after same had been amended by striking out that part of the bill carrying the appropriation of $15,000 for the purchase of additional land, the $6,500 for completing the swine show pavilion, and reducing the amount for the building of an amphitheatre and moving track and speed barns to $100,000. He further stated that the primary object of this meeting was to consider matters pertaining to the construction of the amphitheatre and moving track and barns, and also other necessary improvements summarized in the following schedule:

PROPOSED NECESSARY IMPROVEMENTS AT THE IOWA STATE FAIR AND EXPOSITION GROUNDS FOR SEASON 1909.

Installing coops and otherwise improving poultry building....$	2,300.00
Concrete bridge on Grand Avenue..........................	2,500.00
Additional closet facilities................................	2,500.00
Cattle barn	5,000.00
Balcony in Agricultural Building, to provide floor space for plants and flowers	2,500.00
Removing and repairing horse barns........................	700.00
Rest Cottage (building porch and grading).................	600.00
Hospital, (fitting up old president's office for same)............	400.00
Street improvements, (cinders)..............................	600.00
Curbs and gutters, (on Grand avenue to ditch)..............	500.00
Cement walks	4,000.00
New fencing	600.00
Additional light and power, (for season 1909)................	1,500.00
Completing swine show pavilion..............................	6,500.00
Extension of water mains..................................	1,000.00
Band and vaudeville stands, (with dressing rooms underneath)	1,000.00
Judges stand	500.00
Team	450.00
Miscellaneous improvements and repairs.....................	4,500.00
Insurance	300.00
Expense of fair to be paid prior to 1909 fair..................	5,000.00
Total amount of improvements and expenses enumerated..$	42,950.00

Cash on hand Dec. 1, 1908, after deducting balance due on contracts	$ 20,231.98	
Due from state for insurance, improvements and repairs	1,000.00	
Amount to be paid from State Fair receipts of 1909	5,000.00	$ 26,231.98
Amount of improvement to be paid from 1909 State Fair receipts if all are made		$ 16,718.02

It is anticipated that the sale of secondhand lumber will bring in a sufficient amount to offset the expense of wrecking the old amphitheater. It is also anticipated that the $100,000 appropriation from the state will pay all contracts, architects and engineers fees, grading, etc., rebuilding track, moving and afterwards repairing speed barns. Should this amount exceed the $100,000 same would have to be added to the deficit, or, more properly, anticipated receipts of $16,718.02 from the 1909 state fair.

The board visited the fair grounds and looked over the prospective location for the track and speed barns. Other parts of the grounds were visited with a view of having the board better familiarize themselves with the improvements necessary as presented by the executive committee.

Friday, April 2, 1909.

Board met at nine o'clock a. m. with President Cameron in the chair. Roll call found the following members present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, Packard, Legoe, Curtiss, Ledgerwood, McDonald, Olson and Pike.

The matter of seats for the amphitheatre was discussed and upon motion the executive committee was authorized and instructed to purchase necessary chairs for seating said amphitheatre.

The following report was offered by Mr. Curtiss, chairman of the Committee on Contagious Diseases Among Domestic Animals, who moved that it be accepted and spread upon the minutes, which motion prevailed:

Iowa State Department of Agriculture, Des Moines, Iowa.

Gentlemen: At the annual meeting of the State Board of Agriculture held on December 12, 1907, the following resolution was passed:

RESOLUTION PASSED BY THE STATE BOARD OF AGRICULTURE DECEMBER 12, 1907.

Whereas, The reports of the federal meat inspectors show bovine tuberculosis to prevail in scattered localities throughout the state, therefore be it

Resolved, That the State Board of Agriculture, through its secretary, invite the management of packing houses to report, on January first, the number of cattle and swine, having origin in Iowa, which during the preceding month have been found upon post-mortem inspection to be tuberculous, and that similar reports be made monthly thereafter; when practicable such reports to show the name of the seller and locality where such animals are produced.

Resolved, That all veterinary surgeons be requested to make to the secretary of the Department of Agriculture similar reports in regard to animals which they test.

Resolved, That the committee on contagious diseases be instructed to investigate and report the best methods to be pursued to eradicate the disease from Iowa cattle and swine.

In accordance with the above resolution a committee on contagious diseases was appointed.

Soon after the appointment of the committee steps were taken to secure information concerning the prevalence of tuberculosis in the state, as revealed by the records of the government inspectors at the packing houses at Cedar Rapids, Marshalltown, Ottumwa, Sioux City, Waterloo, Davenport and Fort Madison. The results are indicated by the following correspondence.

Des Moines, Iowa, January 13, 1908.

Dr. A. D. Melvin,
Chief of Bureau of Animal Industry, Department of Agriculture,
Washington, D. C.

Dear Sir:—At the meeting of the State Board of Agriculture last December steps were taken to gather data showing the prevalence of bovine tuberculosis in the state of Iowa. Following the instructions of the board and the resolutions adopted, a copy of which I enclose herewith, I have sent out blanks asking for information on this subject.

It has been suggested to me that if we could get a copy of the report from the chief inspector at the packing centers, such as Chicago, Omaha, Kansas City, St. Joseph, St. Louis, Sioux City, Cedar Rapids and Des Moines, it would be very valuable. If you have any printed reports on this subject showing the results of the inspection at these different points, we would be pleased to have you send a copy to this office.

There will undoubtedly be some legislation on this subject at the next Iowa General Assembly. As you are aware, this is a subject that should be approached cautiously, and we are going to make an effort to secure as much data as possible before that time.

Yours very truly,
(Signed) J. C. SIMPSON, Secretary.

Washington, D. C., January 16, 1908.

Mr. J. C. Simpson,
Secretary of Agriculture,
Des Moines, Iowa.

Dear Sir:—The department is in receipt of your letter of the 13th inst. enclosing a copy of the resolutions adopted at the meeting of the state board last December, regarding the prevalence of bovine tuberculosis in the state of Iowa. There are no printed reports available for distribution showing the percentage of animals found affected with tuberculosis at the large packing centers. For your information there is enclosed a copy of the bureau report for the year 1907, which shows the number of condemnations made on post-mortem inspection for the fiscal year 1907.

In order that you may gather data to show the prevalence of tuberculosis in the state of Iowa, instructions will be issued to the inspectors in charge at Cedar Rapids, Des Moines, Marshalltown, Waterloo, Ottumwa, Sioux City, Davenport, Dubuque and Fort Madison, to furnish the information you desire. As the animals which are shipped from the State of Iowa and killed at the large packing centers, such as Chicago, Illinois, South Omaha, Nebraska and Kansas City, Kansas, are not kept separate, it would be practically impossible to furnish reliable information showing the number of such animals found affected with tuberculosis.

Very respectfully,

(Signed) A. D. MELVIN, Chief of Bureau.

Des Moines, Iowa, January 29, 1908.

GOVERNMENT MEAT INSPECTOR,
Care Agar Packing Company,
Des Moines, Iowa.

DEAR SIR:—We have had some correspondence with Dr. A. D. Melvin, Chief of Bureau of Animal Industry, Department of Agriculture, at Washington, with reference to the effort being made by the Iowa State Board of Agriculture to gather some data showing the prevalence of bovine tuberculosis in the State of Iowa. As there will undoubtedly be some legislation on this subject presented at the next session of the Iowa General Assembly, the State Board of Agriculture is anxious to secure as much data and information possible during the present year, showing to what extent tuberculosis exists among the domestic animals. We have asked the co-operation of Dr. Melvin, and he informs us that the department would be pleased to co-operate with us through the inspectors in charge of the different packing centers in Iowa.

We expect to send out blanks each month asking for a report on the number of cattle and swine tested and the percentage reacting. I enclose herein a blank for the December report and would appreciate your filling it out and returning to this office at the earliest possible date.

Yours truly,

(Signed) J. C. SIMPSON, Secretary.

The result of this investigation covering a period of six months (December, 1907, to June, 1908, inclusive) is condensed in the following table:

SUMMARY OF TUBERCULOSIS INVESTIGATION FOR SIX MONTHS.

Month	Bulls			Steers			Cows and Steers			Calves	Total Cattle			Swine		
	No. Slaughtered	No. Tuberculosis	Percentage	No. Slaughtered	No. Tuberculosis	Percentage	No. Slaughtered	No. Tuberculosis	Percentage	No. Slaughtered	No. Slaughtered	No. Tuberculosis	Percentage	No. Slaughtered	No. Tuberculosis	Percentage
Dec., 1907---	14	2	-----	-----	---	-----	5,161	35	-----	252	------	---	-----	132,335	1,367	------
Jan., 1908---	145	3	-----	999	4	-----	6,344	61	-----	179	------	---	-----	301,058	5,940	------
Feb., 1908---	143	1	-----	1,421	3	-----	4,015	80	-----	199	------	---	-----	361,098	8,917	------
March 1908---	126	---	-----	1,441	105	----	4,053	116	-----	230	------	---	-----	264,216	2,817	------
April, 1908---	57	---	-----	1,522	1	-----	3,032	47	-----	346	------	---	-----	141,495	3,123	------
May, 1908---	36	---	-----	1,465	1	-----	2,647	48	-----	442	------	---	-----	243,151	7,560	------
Total for 6 mos. ----	521	6	01.15	6,848	114	01.66	25,252	387	01.53	1,648	34,269	507	01.48	1,443,353	29,724	02.059

The committee also made inquiries concerning the percentage of animals found affected with tuberculosis in Chicago and Omaha, with the results indicated in the following letters:

Union Stock Yards, Chicago, Dec. 15, 1908.

PROF. C. F. CURTISS,
Experiment Station,
Ames, Iowa.

DEAR SIR:—Replying to your letter of December 12th regarding tuberculosis in live stock from Iowa points, while our figures are necessarily incomplete owing to the difficulty in securing identification, we feel that the following figures are approximate averages on animals found infected:

Steers	2 per cent
Dairy cows	10 per cent
Hogs	6 per cent

Please bear in mind that proportion of infected subjects varies greatly in different districts, but a fair average of all cattle would be around three per cent.

Yours respectfully,

(Signed) SWIFT & COMPANY.
Per J. J. Ferguson.

Chicago, December 21, 1908.

MR. ARTHUR MEEKER,
Armour & Company, Union Stock Yards,
Chicago, Ill.

MY DEAR MR. MEEKER:—Referring to the attached: Owing to the lack of data it is impossible to show the exact number of cattle and hogs from Iowa condemned during the past year on account of tuberculosis.

For the information of Professor Curtiss, I would say approximately two per cent of cattle (other than dairy cows), five per cent of hogs, and ten per cent of dairy cows, within the state of Iowa, are more or less affected with tuberculosis.

(Signed) DR. O. E. DYSON.

THE CUDAHY PACKING COMPANY.

PROVISION DEPARTMENT.

South Omaha, Neb., December 14, 1908.

MR. C. F. CURTISS,
Iowa State College,
Ames, Iowa.

DEAR SIR:—Replying to your inquiry in regard to tuberculosis among hogs and cattle coming from Iowa to Omaha, regret to state that we have no records as to where our hogs and cattle originate from. For your information, however, will state that a trifle over *one per cent* of our hogs is condemned for tuberculosis, basing it on six months or a year's killing, and about *three-quarters of one per cent* of all the cattle that we kill is condemned on account of the same complaint.

Yours truly,

(Signed) M. R. MURPHY, General Superintendent.

ARMOUR AND COMPANY.

UNION STOCK YARDS.

Chicago, Ill., February 5, 1909.

PROF. C. F. CURTISS,
Ames, Iowa.

DEAR PROFESSOR CURTISS:—Answering yours of February 1st, the percentage of condemnations for tuberculosis on our slaughtering in Omaha runs a little in excess of the condemnations in our Chicago slaughtering. I have not before me the data that would show what proportion of Omaha's receipts are Iowa hogs, but I should assume that Iowa furnished a larger percentage of Omaha's total than they would of Chicago's total, though I am not sure of this point. Yours truly,

(Signed) ARTHUR MEEKER.

T. M. SINCLAIR & COMPANY, Ltd.

PORK AND BEEF PACKERS.

Cedar Rapids, Iowa, December 29, 1908.

MR. C. F. CURTISS,
Ames, Iowa.

DEAR SIR:—Your letter of December 12th was duly received and we have got part of the information for you, but not all of it.

From December 1, 1907, to December 1, 1908, we killed 616,198 Iowa hogs. In this number of hogs, we are advised by the government inspector, there were found 20,620 which were affected with tuberculosis. All of these were not totally condemned for food, but this gives you the number in which were found traces of tuberculosis.

We have not got all our figures on cattle together, as it will require some figuring out to get the Iowa cattle separate from cattle outside of the state.

We wish you would kindly pardon us for not having sooner replied to your letter, but we prefer having all the information before giving you a reply.

Any further information which you desire we should be glad to give you if it is in our power to do so.

Yours truly,

(Signed) T. M. SINCLAIR & CO., Ltd.

T. M. SINCLAIR & COMPANY, Ltd.

PORK AND BEEF PACKERS.

Cedar Rapids, Iowa, January 15, 1909.

MR. C. F. CURTISS,
Iowa State College,
Ames, Iowa.

DEAR SIR:—We have your various letters in regard to tuberculosis in cattle and hogs. We have already advised you that there were about 20,620 hogs affected with tuberculosis. Of this number 2,576 were condemned as unfit for food.

We slaughtered during the year about 5,000 cattle from Iowa, and of this number 144 were condemned for tuberculosis. We slaughtered about 20,000 cattle which came from other markets outside of the state, and in this number there were twenty-five condemned for tuberculosis.

We trust this is the information you desire and are very glad to be able to give it to you. Very truly,

(Signed) T. M. SINCLAIR & Co., Ltd.

We also wrote the Sinclair & Company to get information as to what percentage of hogs affected were condemned as totally unfit for food. This is indicated in the letter from Sinclair & Co. under date of January 15th, and was that the total number affected (20,620), which is 3.346 per cent; and of this number 2,576 were condemned as unfit for food. This is 12.5 per cent of the total number affected, or .4 of one per cent of the total number slaughtered. The number of tubercular animals reported from Chicago is very much larger than the number reported from Omaha and Iowa packing houses. It is evident, however, that the percentage reported by Swift & Company and by Dr. Dyson for Armour & Company, are merely estimates. Whether they are reliable or not the committee has no means of knowing. The reports from the government inspectors on the Iowa packing houses are evidently correct, as exact figures are given. The two reports from Omaha are conflicting, and Cudahy Packing Company reports a very small percentage in both cattle and hogs, while Armour reports a higher percentage than Chicago. The committee does not undertake to explain these discrepancies.

After careful consideration of the laws in operation in Minnesota, Wisconsin, Pennsylvania, New York and other states, a bill was drafted in co-operation with the committee on Animal Industry, of the house of representatives of the Thirty-third General Assembly. This bill was introduced by Mr. Ward, the chairman of the committee. The bill received quite favorable consideration for a time. A movement, however, was inaugurated to consolidate the work of the State Veterinary Surgeon, the State Board of Health, and four or five other state commissions, under one head. This plan and some unfavorable reports which eminated from a minority of the investigating committee of the Minnesota legislature concerning the operation of the live stock sanitary board in that state, together with the limited funds available for appropriations by the legislature, tended to retard the progress of any measure of this kind at the present session of the legislature, and the committee on animal industry concluded to abandon the effort to secure legislation concerning tuberculosis and other contagius diseases in domestic animals at this session.

Respectfully submitted,

C. F. CURTISS.
E. M. REEVES.
H. L. PIKE,
Committee.

Mr. Reeves moved that the list of improvements as shown in the schedule presented by the Executive Committee on Thursday be approved, and that said committee be authorized to proceed with them so far as in their judgment conditions will warrant. Motion prevailed.

The following resolution was offered by Mr. Reeves and adopted:

Resolved, That the board approve the plans and specifications for the steel and concrete constructed amphitheater submitted by Architect O. O. Smith, and be it further

Resolved, That the location for the building of the new track and site for the speed barns as agreed upon by the board in their visit to the grounds yesterday be approved, and be it further

Resolved, That the executive committee be and they are hereby authorized and instructed to advertise for bids as per plans and specifications submitted in the manner agreed upon yesterday for the erection of the amphitheater provided for in House File No. 231, a bill for an act appropriating funds for the purpose, and be it further

Resolved, That they be instructed to proceed in the proper manner to have the new track surveyed, and advertise for bids for its construction, also the grading of the grounds upon which the speed barns are to be moved, and be it further

Resolved, That the executive committee be and they are hereby authorized to award contracts for the above work to the lowest responsible and advantageous bidder or bidders, limiting the total amount of cost, including architects's and engineer's fees, to the appropriation of $100,000 made for this purpose, and be it further

Resolved, That the said committee be authorized to proceed with the work of removing the speed barns to the location agreed upon, and be it further

Resolved, That the appropriation as provided in House File No. 231 shall be drawn upon the order signed by the president and secretary of the State Board of Agriculture at such times and in such amounts as may be needed in payment of the work specified.

The following resolution with reference to the employment of an architect was presented and adopted:

Resolved, That Mr. O. O. Smith, architect, who has prepared all preliminary sketches and plans for the amphitheater, be employed by the board to furnish working drawings and specifications complete for receiving bids and letting contracts, not including seating, or grading, except such as may be considered a part of the amphitheater work; said plans to be furnished in such numbers as may be needed by the various persons or firms desiring to bid upon the work, and be it further

Resolved, That his compensation for said plans and specifications and supervision of construction shall be four per cent (4%) of the contract price on the work herein specified with the exceptions noted.

The President appointed Messrs. Johnston, Pike and Ledgerwood as the Committee on Per Diem and Mileage, who filed the following report which was adopted:

Mr. President:—Your committee on per diem and mileage beg to report as follows:

Name—	Days.	Rate.	Amount.	Miles.	Amount.	Total.
C. E. Cameron	4	$4.00	$16.00	140	$14.00	$30.00
W. C. Brown	4	4.00	16.00	102	10.00	26.20
R. S. Johnston	4	4.00	16.00	158	15.80	31.80
C. W. Phillips	2	4.00	8.00	...	.....	8.00
Elmer M. Reeves	4	4.00	16.00	123	12.30	28.30
E. J. Curtin	.	.....	......	...	......	......
S. B. Packard	4	4.00	16.00	58	5.80	21.80
T. C. Legoe	4	4.00	16.00	83	8.30	24.30
C. F. Curtiss	3	4.00	12.00	37	3.70	15.70
John Ledgerwood	4	4.00	16.00	64	6.40	22.40
M. McDonald	4	4.00	16.00	65	6.50	22.50
O. A. Olson	4	4.00	16.00	155	15.50	31.50
H. L. Pike	4	4.00	16.00	200	20.00	36.00

Respectfully submitted,

R. S. Johnston,
H. L. Pike,
John Ledgerwood,
Committee.

Mr. Pike moved that all unfinished business be delegated to the Executive Committee with full power to act. Motion prevailed.

Board adjourned.

MEETING OF AUDITING COMMITTEE.

April 2, 1909.

The Auditing Committee met and approved the following bills and authorized the secretary to issue warrants in payment of same.

Claim No.		
6722	American Express Co., express charges	$ 5.26
6723	U. S. Express Co., express charges	1.00
6724	Wells Fargo Express Co., express charges	4.45
6725	Adams Express Co., express charges	1.68
6717	Des Moines Commercial Club, annual dues	15.00
6711	J. H. Welch Printing Co., printing scholarship circulars	37.00
6678	Daily Capital, yearly subscription	3.00
6720	Baker-Trisler Co., office supplies	4.10
6675	Iowa Lithographing Co., stationery for board	52.50
6692	Iowa Lithographing Co., stationery	1.25
6710	S. Joseph & Sons, silver cup and medals	46.00
6673	Smith, Wetherell & Gage, bal. due on architect's fees, Administration building	95.74
6670	Buck Bros., liquid veneer	.50
6650	P. S. Kell, services, assistant in horse department, 1908 fair	17.50
6685	D. M. Bridge & Iron Co., material repairing Agricultural building	4.00
6696	Merchants' Transfer Co., drayage, fair of 1908	15.00
6706	American Trotting Register Association, year book	4.00
6661	Riddell Auto Co., auto livery	25.50
6675	Des Moines Engraving Co., two cuts of amphitheater	6.86
6697	Des Moines Engraving Co., 24 electros amphitheater	12.00
6709	Des Moines Engraving Co., three-color cuts of amphitheater	23.50
6594	O'Dea Hardware Co., hardware	6.50
6623	O'Dea Hardware Co., hardware	14.20
6659	O'Dea Hardware Co., hardware	13.82
6629	Iowa Telephone Co., toll charges	5.20
6694	Iowa Telephone Co., toll charges	2.10
6631	Western Union Telegraph Co., telegrams	1.65
6662	Western Union Telegraph Co., telegrams	1.70
6721	Western Union Telegraph Co., telegrams	7.16
6595	Des Moines Water Co., water, Nov. 1908	6.26
6625	Des Moines Water Co., water, Dec. 1908	9.56
6663	Des Moines Water Co., water, Jan. 1909	5.45
6708	Des Moines Water Co., water, Feb. 1909	5.23
6647	Mutual Telephone Co., toll bills	.80
6664	Mutual Telephone Co., toll bills	.60
6698	Mutual Telephone Co., toll bills	.50
6718	Mutual Telephone Co., telephone rental	33.00
6728	Mutual Telephone Co., toll bill	.25
6703	The MacMillan Co., 1 vol. Bailey's State Farmer	1.23
6727	Postal Telegraph Co., telegrams	1.04

6639	Star Engraving Co., four electros	.70
6570	Pabst Stock Farm, expense exhibit 1908 state fair	507.00
6737	The MacMillan Co., vol. 4, Bailey's Encyclopedia	5.00
6738	Minn. State Agricultural Society, advertising, attractions	25.00
6739	U. S. Express Co., express charges	1.89
6740	Baker-Trisler Co., supplies	1.70
6741	Iowa Telephone Co., toll charges	3.05
6743	Chas. Koenigsberger, harness repairs	10.80
6742	The Armstrong Press, printing pamphlets, financial statement	9.50
	Total	$1,056.73

EXECUTIVE COMMITTEE MEETING

Saturday, April 3, 1909.

Committee met with all members present.

Mr. Geo. D. Dobson of Des Moines met with the committee and was employed as engineer to lay out the new track, draw plans and specifications upon which bids could be invited. It was agreed that his compensation for the work, including supervision of construction, was to be $150.00.

The committee, in company with engineer Dobson and architect Smith visited the grounds for the purpose of inspecting in detail the locations for the new amphitheatre, track and barns.

The committee looked over and considered plans for an arch concrete bridge, size 12x96x5, for Grand avenue, which had been submitted by the N. M. Stark Bridge Company, to be built of reinforced concrete, for $1,500.00, complete in every detail including two 12 feet cement walks, combined curb and gutter and approaches, as per plans submitted. The secretary was instructed to invite other bridge companies to submit plans and figures.

IN VACATION.

April 6, 1909.

Warrant No. 7000 for $425.00 was issued to the A. H. Walker Co., being final estimate on plumbing contract for the Administration Building. Claim No. 6754.

April 8, 1909.

Warrant No. 7001 for $101.50 was issued to [illegible], being for seven tons of alfalfa hay for the forage department. Claim No. 6755.

April 8, 1909.

Warrant No. 7002 for $[illegible] was issued to Geo. H. Dobson, engineer, for running levels and making contour map of the northwest corner of the fair grounds. Claim No. 6756.

Warrant No. 7003 for $8.00 was issued to Mrs. C. A. Munson, being refund of payment in Swine Department in 1908, the same having been sent in by her husband who is now deceased. Claim No. 6753.

Warrant Nos. 7004 to 7031 inclusive issued in payment of claims approved by the Auditing Committee at their meeting on April 9.

April 10, 1909.

Warrant No. 7032 for $200.00 issued to J. C. Simpson, being for extra services as member of the Executive Committee for the months of February and March. Claims No. 6708 and 6736.

April 12, 1909.

Warrant No. 7033 for $440.00 issued to J. H. Deemer in payment of money advanced in purchase of mule team for the fair grounds, authorized this date by the Executive Committee. Claim No. 6763.

Also warrant No. 7034 for $391.75 to Jas. H. Deemer, superintendent, in payment of pay roll. Claim No. 6765.

EXECUTIVE COMMITTEE MEETING.

April 10, 11, 12, 1909.

Committee met with members Cameron and Simpson present.

Committee adjourned to the office of architect O. O. Smith and then conferred with engineer Dobson with reference to the grades and proper levels to establish for the new race track and amphitheater.

Committee afterwards visited the fair grounds in company with engineer Dobson.

Mr. Deemer, superintendent of grounds, presented his pay roll for labor from March 1st to April 10th, amounting to $391.75, and warrant was authorized to be issued in payment of same.

The question of employment of bands and an orchestra for the fair was considered and contracts were authorized with the Iowa Brigade Band of Oskaloosa and Graham's orchestra of Des Moines.

Plans and specifications and proposals for the building of a concrete bridge across the stream in the fair grounds at Grand avenue were presented by the N. M. Stark Bridge Company and the George M. King Construction Company of Des Moines, said bridge to be 16x24 feet with a five foot arch.

Secretary was instructed to advertise for and receive bids for the sale and removal of the old amphitheater, bids to be opened on the 27th of April.

Warrant No. 7035 for $26.00 was issued to C. E. Cameron in payment of per diem and mileage.

EXECUTIVE COMMITTEE MEETING.

April 21-22, 1909.

Committee met with all members present.

The bids filed April 17th for the grading to be done on the northwest corner of the State Fair and Exposition Grounds (location for speed barns) were laid before the committee and were as follows:

	Grading per cu. yd.	6-in. drain tile per rod.
J. M. Stewart	$ .19½	$1.30
McRae Construction Co	.29½	2.06
J. L. Hanaman	.30	1.81½

It was decided to separate the tiling from the other work, and on motion of Mr. Brown the grading work was let to Mr. Stewart at his bid of $.19½ per cubic yard, same to be completed on or before May 8, 1909.

Superintendent of Grounds J. H. Deemer was authorized to purchase 2,500 feet of six inch drain tile from the Goodwin Brick & Tile Company at $31.00 per M., f. o. b. cars fair grounds switch, and was instructed to proceed with the laying of the tile. Later the laying of the tile was contracted at 35 cents per rod by the superintendent.

Secretary was instructed to issue warrant for $40.00 in favor of Geo. D. Dobson, being partial payment for his services as engineer on the track work and grading west of track.

Warrant was authorized issued in favor of The Tama Herald for $4.88 in payment for advertising the State Fair of 1908.

Warrants for per diem and mileage were issued as follows:

No. 7037	C. E. Cameron	$26.00
No. 7038	W. C. Brown	22.20

IN VACATION.

April 26, 1909.

Warrant No. 7039 for 322.77, to Jas. H. Deemer, superintendent, pay roll for labor, April 10-24. Claim No. 6780.

EXECUTIVE COMMITTEE MEETING.

April 27, 28, 29, 1909.

Executive committee met with all members present, as were also members of the board, Packard and Curtin.

Mr. J. B. McGorrisk, general contractor for the constuction of the Administration building during the season of 1908, was present and asked for a final settlement of his contract, there having been retained from the contract price when settlement was made in December, 1908, $250.00; $100.00 of this amount was retained until it was proved whether certain doors in the basement of said building would prove to be satisfactory. On inspection of the building the doors having been found satisfactory in every respect, it was ordered that the $100.00 retained be paid to Mr. McGorrisk. The balance, or $150.00, of the amount retained, was withheld owing to the unsatisfactory condition of the cement floor in the main lobby of the building. After discussing the matter at length and inspecting the floor, it was agreed that $50.00 would repair or place the floor in a satisfactory condition, and the balance, or $100.00, was ordered paid to Mr. McGorrisk, secretary being authorized to issue warrant for $200.00 in full settlement of all claims and balance due on contract.

The time having arrived for the opening of bids for grading in connection with the construction of the new race track, the committee proceeded with this work. The following persons had filed bids in the amount as indicated opposite their name:

Coon & Kaus, 518 Iowa Loan & Trust bldg., Des Moines, per yard	49c
Barnes Bros., 1220 13th St., Des Moines, per yard	27 1-2c
J. M. Stewart, 1705 Des Moines St., Des Moines, per yard	29 1-3c

On motion the contract was awarded to Barnes Bros. at their bid of 27½ cents per yard and secretary was instructed to draw up a contract and require a bond of $2,000; provided, however, that no contract be entered into until after bids for the construction of the grand stand were opened on Thursday, April 29th, and contract awarded for same.

The engineers' estimate of the amount of dirt to be removed in the construction of the race track was 24,000 yards.

Wednesday, April 28, 1909.

Committee met with all members present, as was also member of the Board E. J. Curtin.

Mr. B. W. Crossley of Ames, and Mr. D. F. Sheehan of Osage, were present to discuss with the Superintendent of the Agricultural Department and the committee the arrangment of space in the Agricultural building and plans for making an educational exhibit of farm products. The committee adjourned to the grounds and an inspection of the building was made.

The time set for the opening of bids for the sale of the old amphitheater having arrived, committee proceeded to open bids.

After due consideration of the bids received it was decided to reject all bids for the reason that in the judgment of the committee said bids were not commensurate with the value of the building, the committee believing that much more could be realized out of the building for the Department should they proceed to take it down by day labor, disposing of what material could not be used advantageously in repairing and reconstructing buildings at the grounds.

Warrant was authorized issued to D. F. Sheehan for $9.85, amount of expenses incurred in attending meeting in consultation with Mr. Curtin, Superintendent of the Agricultural building.

Warrant for $32.80 was authorized issued to Mr. E. J. Curtin for per diem and mileage attending special committee meeting.

Thursday, April 29, 1909.

Committee met with all members present. The time set for receiving propesals for the construction of the new grand stand having arrived, committee proceeded to open bids. The various bids and proposals follow:

PROPOSITION No. 1.

Furnish all materials, building complete—	
Building complete, includes general steel and electric work, O. P. Herrick	$161,895.00
Structural iron—	
Des Moines Bridge & Iron Works	74,980.00
Modern Steel Structural Co	76,691.00
Central States Bridge Co	73,000.00
O. P. Herrick	77,470.00
General contract—	
Chas. Weitz' Sons	78,186.00
O. P. Herrick	88,080.00
Grading—	
O. P. Herrick	6,450.00
Plumbing—	
A. H. Walker Co	3,480.00
Wallace & Linnane	3,650.00
Des Moines Plumbing & Heating Co	3,700.00
Lighting—	
John Collins	925.00
Olson-Boettger Electric Mfg. Co	862.00

PROPOSITION No. 2.

If the two west sections are omitted—	
Complete as per specifications, J. C. Mardis	$140,995.00
Structural Iron, including mezzanine story—	
Des Moines Bridge & Iron Works	64,580.00
Modern Steel Structural Co	66,000.00
Central States Bridge Co	61,268.00
O. P. Herrick	66,470.00
General contract—	
Chas. Weitz' Sons	64,047.00
O. P. Herrick	70,464.00
Grading—	
O. P. Herrick	5,750.00
Plumbing—	
A. H. Walker Co	950.00
Lighting—	
John Collins	761.00
Olson-Boettger Electric Mfg. Co	818.00

PROPOSITION No. 3.

If the two west and the two east sections are omitted.

Complete as per specifications—	
J. C. Mardis	$118,395.00

Structural iron—	
Des Moines Bridge & Iron Works	54,000.00
Modern Steel Structural Co	55,000.00
Central States Bridge Co	49,482.00
O. P. Herrick	55,470.00
General contract—	
Chas. Weitz' Sons	50,774.00
O. P. Herrick	53,904.00
Grading—	
O. P. Herrick	5,750.00
Lighting—	
John Collins	673.00
Olson-Boettger Electric Mfg. Co	774.00

PROPOSITION No. 4.

If the south and end walls are omitted, also the interior walls of kitchen and store rooms, the mezzanine story and the cement floor of the exhibition rooms, dining room, kitchen and store rooms, except the telephone rooms.

Complete as per specifications—	
J. C. Mardis	$118,285.00
General contract—	
Chas. Weitz' Sons	42,247.00
Lighting—	
John Collins	654.00
Olson-Boettger Electric Mfg. Co	572.00

PROPOSITION No. 5.

If the south and end walls are deducted from the second bid, also the interior walls of kitchen and store rooms, the entire mezzanine story and the cement floor of the exhibition rooms, dining room, kitchen and store rooms, (excepting the telephone rooms.)

Complete as per specifications—	
J. C. Mardis	$ 98,975.00
General contract—	
Chas. Weitz' Sons	37,920.00
Lighting—	
John Collins	572.00
Olson-Boettger Electric Mfg. Co	703.00

PROPOSITION No. 6.

If the two west sections are omitted, also the mezzanine floor, the interior brick walls of the kitchen and store rooms, and the cement floors of the exhibition rooms, store rooms and kitchen, (excepting telephone rooms.)

Complete as per specifications—	
J. C. Mardis	$125,000.00
Structural iron—	
Des Moines Bridge & Iron Works	62,500.00
Modern Steel Structural Co	64,800.00
Central States Bridge Co	59,800.00
O. P. Herrick	64,375.00
General contract—	
Chas. Weitz' Sons	58,032.00

In addition to the foregoing, the following bid covering such portions of the work as indicated was submitted by the Des Moines Bridge & Iron Works:

(No. 1.)

Des Moines, Iowa, April 29, 1909.

State Board of Agriculture,
Des Moines, Iowa.

Gentlemen:—We have examined the plans and specifications for the new grand stand for the Iowa State Fair, and in order to get before you a proposal that will enable you to utilize the entire seating capacity of the building we make the following proposition:

We will furnish the steel structural work according to plans and specifications, except that we will omit the entire mezzanine floor framing except the beams that frame to the columns; omit the stairs leading to the mezzanine floors; omit the ornamental iron gates at both main entrances and ends. We will also furnish oak treads and risers for the stairways in place of the cast iron specified, the stringers and railing to be made the same specified. We will furnish the roof complete with sheet metal all according to specifications; also the floor supporting the seats. We will include the brick wall with footings under the north edge of the amphitheater and on each side of the main entrances as high as the mezzanine floor; furnish cement sidewalks as shown at the entrance and back as far as the main stairway; also include the curb about the paddock, doing all of this work complete and finishing within the time specified by you for the sum of eighty-six thousand, six hundred and fifty dollars ($86,650.00).

Our certified check for $4,500.00 is on file guaranteeing that we will enter into contract in accordance with this proposal.

Yours very truly,
Des Moines Bridge and Iron Works,
By B. N. Moss, Secretary and Treasurer.

The following bid was received for grading:

Barnes Bros., Des Moines, estimated number of yards, 9,000 at 30 cents per yard.

After a careful consideration of the bids, it was quite apparent to the committee that contract could not be let within the amount available for this work unless certain other features in connection with the grand stand should be omitted. After careful figuring on the part of the committee, it was agreed to ask those submitting bids for a revised bid for an eight section stand. The following deductions were asked to be made by the various firms submitting bids on structural iron work: For the omission of all ornamental iron gates and panels the bids were as follows:

Central States Bridge Co.	deduct	$1,300.00
Des Moines Bridge & Iron Works	deduct	3,075.00
Modern Steel Structural Co	deduct	4,000.00

The following omissions were agreed upon from the general contract upon which revised bids were to be submitted:

1. Leaving off all work in connection with the building of the two telephone booths.
2. Omitting all cement work.
3. Omitting curbing and railing in paddock.
4. Using 7-8 instead of 1 1-8 in. sheathing.
5. Substituting crushed stone four-ply composition roof laid on dry paper in place of ruberoid or asbestos roofing specified.
6. Omitting one coat of paint on all structural iron work.
7. Leaving out all work in connection with toilet rooms.

Upon this proposition the following revised bids were received:

Chas. Weitz' Sons deduct from their No. 5 bid	$12,020	$25,900
J. C. Mardis, deducting from their No. 5 bid, also omitting all structural iron and ornamental iron work	66,807	32,168

The following revised bid from the Des Moines Bridge & Iron Works for the entire work, covering structural iron and general contract, with the omissions above enumerated from the general contract and structural iron work, also including the ornamental iron gates, substituting oak risers and treads on all stairways:

(No. 2.)

Des Moines, Iowa, May 1, 1909.

STATE BOARD OF AGRICULTURE,
Des Moines, Iowa.

GENTLEMEN:—We have examined the plans and specifications for the new grand stand for the Iowa State Fair, and in accordance with your request we submit the following proposal:

We will complete the building in accordance with the fifth item of the form of proposal for the general contract, and the third item of the form of proposal for the steel and iron, subject to the changes and modifications mentioned herein, for the sum of seventy-eight thousand nine hundred dollars ($78,900.00).

We understand proposal number five to cover the building according to the plans and specifications with the omission of the two west sections, also the south and end walls, the interior walls of kitchen and store room, the entire mezzanine story and the cement floors of the exhibition rooms, dining room, kitchen and store rooms.

In addition to the above omissions this proposal is based on leaving off:

1. Telephone booths.
2. All cement walks and floors.
3. Curbing and rail on paddock.
4. Using ⅞-in. sheeting in place of 1⅛-in. as specified.
5. Using a crushed stone composition roof, four-ply on dry paper in lieu of the roof specified.
6. Leaving off the last coat of paint specified for the structural steel and iron work.
7. Leave off all toilet rooms.
8. Use oak treads and risers in place of cast iron.
9. Use corrugated iron to support the concrete of the theater floor in place of the Hy-rib metal specified.

This would leave, according to our interpretation of the plans and specifications, all the structural steel and iron according to the specifications, except the two west sections, omitting the railing around the paddock, changing the treads of the stairs to oak and omitting all steel in the mezzanine floor except the beam framing between columns. Said iron work to have one coat of paint at the shop and another coat after erection. It would include the gates, fences, turnstiles, ticket boxes; it also includes the wall on the north of the kitchen, storage rooms, pantries and men's toilets, with doors and windows. Also the walls at sides of main entrances.

The amphitheater floor complete, as specified, except that we are to use corrugated steel in place of the Hy-rib metal.

It also includes the roof complete and the sheet metal work.

Yours very truly,
Des Moines Bridge & Iron Works,
By B. N. Moss, Secretary and Treasurer.

After a careful consideration of the revised bids submitted, and combining the lowest bids on the general contract with the lowest bid on the structural iron work, and comparing same with the revised bid covering both propositions as submitted by the Des Moines Bridge & Iron Works, it was decided to award the contract to the latter firm at their last proposal submitted (Marked No. 2) at $78,900.00, and secretary was authorized to enter into contract with said firm in accordance with the plans and specifications and proposal accepted for this amount.

The grading in connection with the grand stand was awarded to Barnes Bros. at 30 cents per yard.

All bids for plumbing were rejected for the reason that same could not be included and keep within the amount of money available.

The awarding of contract for electric wiring was deferred until the next meeting of the committee.

Mr. Deemer, Superintendent of Grounds, was instructed to take down the old amphitheatre and sell such material as cannot be used advantageously at the grounds. He was also instructed to proceed with the moving of the speed barns to the new location selected for same.

Warrants were issued in payment of per diem and mileage as follows:

No. 7049	C. E. Cameron	$38.00
No. 7048	W. C. Brown	34.20

Committee adjourned to meet in Chicago on Monday, May 3d, as per previous arrangement with representatives of the Pain Pyrotechnic Company of New York to consider proposition on night show.

IN VACATION

April 30, 1909.

Warrants were issued in payment of salaries for the month of April as follows:

No. 7042	J. H. Deemer, superintendent of grounds	$ 83.33
No. 7043	A. R. Corey, clerical services	100.00
No. 7044	Elsie Colton, clerical services	75.00
No. 7069	J. C. Simpson, for extra services as member and clerk executive committee	$100.00
No. 7046	Edith Smith, clerical services	56.35

May 1, 1909.

Warrant No. 7047 issued to J. I. Meyerly, postmaster, for $50.00 in payment of postage.

EXECUTIVE COMMITTEE MEETING.

Chicago. Ill.

May 3-4, 1909.

As per previous arrangement the executive committee met in Chicago with the agent for the Pain Pyrotechnic Company and entered into contract for the production of the spectacular show "The Battle in the Clouds," five nights at $6,000.

Warrants were authorized issued in payment of expense of the committee attending meeting at Chicago.

IN VACATION.

May 6, 1909.

Warrant No. 7050 for $40.25 issued to Henry Grandgeorge in payment of work laying tiling.

May 10, 1909.

Order signed by the President and Secretary sent to the State Auditor asking that warrant for $5,000.00 be issued to the Department of Agriculture, being the first installment of the $100,000.00 appropriation for the building of amphitheater, track and moving of barns; also order for $1,000.00 annual appropriation for impovements and repairs.

May 11, 1909.

Warrant No. 7052 for $679.42 issued to J. H. Deemer, superintendent, for pay roll on work at fair grounds from April 24 to May 9, 1909.

May 13, 1909.

Warrant No. 7053 for $54.95 issued to B. W. Crossley in payment of expense incurred in the preliminary work preparing for the educational exhibt of farm crops at the 1909 fair.

May 14, 1909.

Warant No. 7054 for $26.00 issued to J. I. Myerly, postmaster, in payment of postage.

May 15, 1909.

Warrant No. 7055 for $282.19 issued to the Des Moines Ice & Cold Storage Company, by order of the President, in payment of bill for filling ice house at the fair grounds.

EXECUTIVE COMMITTEE MEETING.

May 16-17, 1909.

Executive committee met with members Cameron and Simpson present. The greater part of the time was spent at the fair grounds inspecting improvements then under way and considering other work to be done.

The purchase of half a dozen sanitary drinking fountains was authorized.

Statement was presented from O. O. Smith, architect, for $2,367.00, first payment on plans and specifications for the amphitheater, and warrant was authorized issued in payment of same.

It was decided to put in a concrete bridge north of Grand avenue and south of the track. Contract for the bridge was let to the N. M. Stark Bridge Company of Des Moines for $400.00, size of bridge 12x5x24.

Secretary was authorized to receive bids and award contracts for the walks, crossings and curbing, if in his judgment the bids received were reasonable.

Warrant No. 7056 for $57.15 was issued to C. E. Cameron in payment of expense in attending meeting in Chicago on May 3-4, and per diem and mileage for the present committee meeting.

IN VACATION.

May 19, 1909.

Warrant No. 7057 for $60.00 issued to J. I. Myerly, postmaster, in payment of postage on premium lists.

May 20, 1909.

The following bids for cement walks, crossings and combined curb and guttering were received:

	Names	Walks per square ft.	18 inch curb per lin. ft.	Crossing	Remarks
1	J. S. McLaughlin & Sons	$.11	1-2-3-3	1-2-3-3	1-4
		.10	$.45	$.16	1-2-3-3 Walks
2	Koss, Peters & Hansman	.109	.519	.14	
		.098	.485	.139	
3	W. H. Brereton	.10	.404	------------	36 in. gutter 60c.
4	Bates & Thomas	.145	------------	.224	
5	McRae Construction Co	.099	.50	.17	36 in. 45c.
6	L. J. Johnston	.115	.40	------------	36 in. c. & g. 60c.
7	Geo. M. King Con. Co	.11	.445	.15	36 in. 75c.
8	Indestructable Air Cell Pipe Covering Co	.16	.69	.28	$1.30.
9	O. P. Herrick	.11⅞	.59	------------	69c.
10	Henry Stevens	.13	------------	.145	
11	Potts Bros.	.09	.40	.13	36 in. c. 45c.
12	Christie Const. Co	.13 1-3	.56	.16	Special construction

Note—The McRae Construction Company revised their bid to read: 9c for walks, 13c for crossings, 40c for 6-18-in. curb and guttering and 45c for 10in.-18in.

The low figure on the above work was as follows:

Sidewalks	9c per sq. ft.
Crossings	13c per sq. ft.
Curb and gutter, 6-in.-18-in	40c per lin. ft.
Curb and gutter, 10-in.-36-in	45c per lin. ft.

The work was let to Potts Bros., and the McRae Construction Co. at these figures.

May 22, 1909.

Warrant No. 7058 for $57.40 issued to W. C. Brown in payment for expense of attending committee meeting in Chicago on May 3-4, and per diem and mileage for committee work in connection with Privilege Department.

Warrant No. 7059 for $62.50 issued to Spirit of the West in payment of advertising speed program.

Warrant No. 7060 for $2,367.00 issued to O. O. Smith, architect, as per instructions of executive committee at their last meeting, May 16-17.

Order was given to C. Hennecke & Co., of Milwaukee, for 100 four-foot lawn seats at $1.75 each, f. o. b. Milwaukee.

Contract was made with Zero Ice Company to handle the ice privilege at the fair of 1909.

Order was given to the L. Wolf Company of Chicago for one-half dozen of their No. H-6942-B drinking fountains, height of same 28 1-2 in., list price $21.00 each, discount 20% and 10% off, making net cost $15.12 each, boxing and freight to be added.

May 24, 1909.

Warrant No. 7061 for $67.50 issued to A. Olson in payment for shingling barns at the fair grounds.

Warrant No. 7062 for $20.00 issued to B. W. Crossley for postage on account of work in working up exhibit of farm crops.

May 25, 1909.

Warrant No. 7063 for $109.00 issued to Baird, Taylor, Crawford & Co. for premium on insurance on the No. 2 brick horse barn.

EXECUTIVE COMMITTEE MEETING.

May 26, 1909.

Committee met with all members present.

Committee proceeded to consider list of improvements for the state fair grounds which the board had approved at their meeting of April 2d.

Thursday, June 9, was set as the date to receive propositions for seating of amphitheater and secretary was instructed to invite proposals from various firms upon this date. Proposals were to be submitted upon opera chairs, park or lawn settees with individual arms, and kitchen (a bow back chair) for the open, and folding chairs for the boxes.

The secretary was authorized to have plans drawn and specifications written for the following improvements:

For finishing the swine show pavilion.

For a balcony around the south end of the Agricultural building.

For permanent stages in front of the amphitheater for a music stand and a vaudeville platform.

The secretary was also authorized to prepare specifications and ask for bids for the construction of a cattle barn, a duplicate of the brick barn now on the gounds; bids to be submitted Friday, June 11th.

Warrants were issued in payment of per diem and mileage as follows:

No. 7067	W. C. Brown	$34.20
No. 7068	C. E. Cameron	34.00

IN VACATION.

May 27, 1909.

Warrant No. 7064 for $85.00 issued in favor of Geo. D. Dobson, being second payment for engineering services rendered upon the new race track.

May 28, 1909.

Warrant No. 7065 for $928.15 issued in favor of J. H. Deemer upon pay roll for labor at the fair grounds fom May 8 to May 22.

Also warrant No. 7066 for $75.00 issued in favor of J. I. Myerly, postmaster, in payment of postage on premium lists.

May 31, 1909.

Warrants issued in payment of services for the month of May as follows:

No. 7069	J. C. Simpson, for extra services as member and clerk of executive committee	$100.00
No. 7070	A. R. Corey, salary for May	100.00
No. 7071	Elsie Colton, salary for May	75.00
No. 7072	Edith Smith, salary for May	65.00
No. 7073	Jas. H. Deemer, salary for May	83.33

Also warrant No. 7073 for $700.00 issued to J. M. Stewart for grading the plot of ground for speed barns as per contract.

June 1, 1909.

Warrant No. 7075 for $65.00 issued in favor of J. T. Fredregill in payment of contract for laying foundations under horse barns Nos. 7 and 9.

June 2, 1909.

Warrant No. 7076 for $3.86 issued to the C. & N. W. Ry. Co. in payment for freight on paint.

June 4, 1909.

Warrant No. 7077 for $63.59 issued to B. W. Crossley for expenses incurred during the month of May in the work for the educational exhibit of farm crops for the state fair of 1909.

Also warrant No. 7078 for $30.00 issued to B. W. Crossley for postage issued in connection with the above work.

Also warrant No. 7079 for $24.00 issued to J. C. Simpson in payment of expense incurred on trip to Chicago on May 1 and 2 with the executive committee, looking into the work of securing an evening show.

June 5, 1909.

Warrant No. 7080 for $67.18 issued to A. Olson in payment of contract entered into by J. H. Deemer, superintendent, for the laying of 53¾ M. shingles on horse barns.

Also warrant No. 7081 for $26.00 issued to J. I. Myerly in payment for postage on the second number of "Greater Iowa."

June 7, 1909.

Warrant No. 7082 for $33.47 issued to the C. & N. W. Ry. Co. in payment for freight on woven wire fence for race track.

June 9, 1909.

Warrant No. 7083 for $4.88 issued to C. J. Wonser, publisher of the Tama Herald, in payment for advertising bill for 1908 fair.

Also warrant No. 7084 for $5.20 issued to R. B. Piper, publisher of the Sheldon Mail, for the same purpose.

June 10, 1909.

Warrant No. 7085 for $60.00 issued to J. I. Myerly in payment of postage on 3,000 premium lists.

Also warrant No. 7085 for $75.00 issued to J. I. Myerly for postage stamps.

June 11, 1909.

Warrant No. 7087 for $795.19 issued to J. H. Deemer, superintendent, in payment of labor pay roll at the fair grounds from May 22 to June 5.

June 12, 1909.

Warrant No. 7088 for $1,000 issued to Potts Bros., account of first estimate on their contract for cement walk.

Also warrant No. 7089 for $507.00 issued to the Pabst Stock Farm in payment for expenses incurred in making show of horses at the Iowa State Fair of 1908, as per agreement with Mr. Curtiss, Superintendent of Horse Department, and settlement agreed upon by the executive committee.

EXECUTIVE COMMITTEE MEETING.

June 9, 10, 11, 12, 1909.

Committee met with all members present.

Contract for wiring amphitheater for electric lights was awarded to the John Collins Company at their bid of $507.00.

Order was made upon the State Auditor, signed by the President and Secretary for $10,000.00; being second amount drawn on appropriation of $100,000.00 made by the last general assembly for the construction of a new amphitheater, race track, etc.

Secretary was authorized to issue warrants in payment of estimates on contracts and labor pay rolls when same are presented and O. K.'d by the proper parties.

Messrs. Legoe and Johnston, members of the board, met with the committee to discuss matters pertaining to the work and exhibits in their respective departments.

The time set for the opening of bids (Thursday, June 10) for the seating of the amphitheater having arrived, the committee proceeded to open bids filed. Propositions were received from the Chase & West Co. and Davidson Bros., of Des Moines, and the Chittenden & Eastman Co. of Burlington by M. O. Griffin; those named being the only firms to respond to the notice sent out inviting bids.

The various styles of seats upon which propositions had been received were discussed by the committee. After carefully studying the bids made it was concluded, owing to the difference in cost, to use the kitchen or bow back chair for seating all of the stand except the reserved seat sections and boxes. For the reserved seat sections it was agreed to purchase as many opera chairs as was necessary to complete the seating of these sections after installing what opera chairs were already on hand which had been taken from the old amphitheater. The samples of folding chairs submitted not being satisfactory to the committee, it was decided to defer the purchase of said folding chairs to a later date.

The contract for the kitchen or bow back chair was awarded to Davidson Bros. of Des Moines, they being the lowest bidders on this kind of chairs; their proposition for a No. 1, four spindle bow back chair, delivered set up at the fair grounds, being $6.69 per dozen. The estimated number needed was 380 dozen more or less, making the amount of their contract approximately $2,542.00.

The contract for the opera chairs necessary to fill out the reserve seat section was awarded to Chase & West Co. of Des Moines, upon their bid of $1.11 per seat; bid being made upon the American Seating Company's chair, which was considered far superior to the other makes in strength and construction; their bid being based upon delivery at the fair grounds and to furnish a man for two days to superintend the setting up of seats. It was estimated that approximately 700 seats would be necessary, making the amount of their contract approximately $777.00.

The committee proceeded to open bids filed for the construction of cattle barns, as per the following form of proposal:

FORM OF PROPOSAL.

J. C. Simpson, Secretary,
Iowa Department of Agriculture,
Des Moines, Iowa.

Dear Sir:—The undersigned having carefully examined the brick cattle barn at the fair grounds and the specifications for the construction of a duplicate of this barn on the Iowa State Fair and Exposition grounds at Des Moines, Iowa, except as otherwise provided by these specifications, hereby propose:

1. To furnish all material and labor and to erect and complete said barn for the sum of........................$————

..............................hereby agree if our proposal and bid is accepted to enter into contract and furnish bond as required within six days after notification of such acceptance and as a guarantee thereof, herewith, submit certified check on bank of...........................
for $............., being five per cent of above bid.

Respectfully submitted,

.... Contractor.
.... Address.

Bids were as follows:

Chas. Weitz' Sons	$5,320.00
P. A. Callen	5,389.00
James Maine & Sons' Co	6,122.00
For painting—	
J. E. Graham	$ 110.00

All bids were rejected as being too high and new bids called for.

The following bills were presented, audited, and the secretary authorized to issue warrants in payment of same:

Claim No.		Amount.
6811	U. S. Express Co., express charges	$ 1.32
	U. S. Express Co., express charges	3.83
6779	U. S. Express Co., express charges	1.10
6805	Adams Express Co., express charges	1.31
6863	Adams Express Co., express charges	2.20
6851	Wells Fargo Express Co., express charges	.35
6813	Wells Fargo Express Co., express charges	.30
6804	American Express Co., express charges	2.43
6852	American Express Co., express charges	3.84
6773	American Trotting Association, annual dues	100.00
6824	The Horse Review, advertising speed program	65.78
6800	Improvement Bulletin, advertising for bids on amphitheater.	11.10
6816	American Contractor, advertising for bids on amphitheater	14.99
6747	Register and Leader, advertising for bids on amphitheater	26.25
6858	Register and Leader, advertising for bids on sidewalks	1.25
6784	Register and Leader, advertising for bids on track	9.76
6771	Register and Leader, adv. for bids on sale of old amp	6.00
6796	Daily Capital, advertising for bids on amphitheater	16.00
6834	Daily Capital, advertising for bids on sidewalks	1.68
6772	Daily News, advertising for bids on grading	9.72
6823	Daily News, advertising for bids on amphitheater	11.77
6778	Iowa Telephone Co., toll charges	1.45
6825	Iowa Telephone Co., toll charges	4.05
6777	Mutual Telephone Co., toll charges	.30
6840	Mutual Telephone Co., toll charges	.75
6857	Mutual Telephone Co., rental of two phones	16.50
6799	Western Union Telegraph Co., telegrams	.89
	Western Union Telegraph Co., telegrams	3.55
6814	Ferguson Printing Co., printing speed program, envelopes, etc.	91.00
6855	Ferguson Printing Co., printing speed entry lists, etc	14.50
6839	Wallaces' Farmer, printing Greater Iowa, May 15, 1909	23.95
6888	Wallaces' Farmer, printing Greater Iowa, June 5, 1909	23.95
6761	J. H. Welch Printing Co., printing educational pamphlets	39.00
6874	J. H. Welch Printing Co., printing feed barn book	13.00
6812	E. D. Chassell, binding privilege contracts	7.20
6835	E. D. Chassell, binding award books	2.00
6758	Des Moines Water Co., water rental for March	7.16
6806	Des Moines Water Co., water rental for April	3.63
6853	Des Moines Water Co., water rental for May	6.24
6776	Goodwin Tile & Brick Co., tile for fair grounds	77.50
6837	Lewis-Wallace Printing Co., printing envelopes	16.25
	D. E. Moon, printing twp. letters, etc	9.50
6864	Hawkeye Calendar Co., hangers	90.77
6760	D. M. Rubber Stamp Works, rubber stamps	1.00
6775	C. F. Curtiss, expense special committee work	7.75
6867	American Steel & Wire Co., woven wire fence	167.60

IN VACATION.

June 12, 1909.

Warrant No. 7090 for $167.60 was issued to the American Steel & Wire Company in payment for woven wire fencing for the race track.

June 15, 1909.

Warrant No. 7091 was issued to C. E. Cameron, for $46.00, payment for services in looking after the work at the fair grounds. Also warrant No. 7092 for $62.25 issued to J. I. Myerly, postmaster, for postage on premium lists.

June 17, 1909.

Warrant No. 7093 for $120.00 issued to Ora Williams in payment of services as chief in charge of the Publicity Department of the State Fair. Also warrant No. 7094 for $39.80 issued to R. S. Johnston for services and expenses in attending to special committee work on account of the Swine Department. Also warrant No. 7095 issued to H. D. DeKalb, of DeKalb, Iowa, for $10.00, being refund of amount sent in for pen rent in the Swine Department.

June 18, 1909.

Warrant No. 7096, for $74.20, issued to W. C. Brown in payment of expenses in attending committee meeting in Chicago the 1st of May, and for services of special committee work in Privilege Department. Also warrant No. 7097, for $47.81, issued to A. Olson, account of laying shingles on speed barns at fair grounds as per contract with the superintendent of grounds. Also warrant No. 7098, for $47.90, issued to Wallace's Farmer in payment for bill for printing "Greater Iowa."

June 22, 1909.

The following warrants and amounts were issued as per instructions of the executive committee at their last meeting:

Claim No.		Amount.
7099	Ferguson Printing Co., printing	$106.40
7100	Western Union Telegraph Co., telegrams	4.44
7101	Geo. A. Sherer, repairs on superintendent's house	11.28
7102	Mutual Telephone Co., phone rental and toll fees	17.55
7103	Iowa Telephone Co., toll fees	5.50
7104	J. H. Welch Printing Co., printing	52.50
7105	E. D. Chassell, binding	9.20
7106	D. M. Water Co., water rent, March, April and May	17.03
7107	Goodwin Brick & Tile Co., tile for fair grounds	77.50
7108	Lewis-Wallace Printing Co., printing	16.25
7109	C. F. Curtiss, special committee work	7.75

Claim No.		Amount
7110	Hawkeye Calendar Co., hangers	90.77
7111	D. E. Moon, printing	9.50
7112	D. M. Rubber Stamp Works, stamps	1.00
7113	D. M. Daily News, advertising for bids	21.14
7114	D. M. Daily Capital, advertising for bids	17.68
7115	Register and Leader, advertising for bids	45.34
7116	American Contractor, advertising for bids	14.99
7117	Improvement Bulletin, advertising for bids	11.10
7118	Horse Review, advertising stake races	65.78
7119	American Trotting Association, annual dues	100.00
7120	American Express Company, express charges	6.27
7121	Wells Fargo Express Co., express charges	.65
7122	Adams Express Co., express charges	3.51
7123	U. S. Express Co., express charges	6.25
7124	J. C. Simpson, special committee work, trip to St. Paul	20.30
7125	B. W. Crossley, postage, exhibit of farm crops	35.00
7126	C., R. I. & P. Ry. Co., freight on cooping	132.00

EXECUTIVE COMMITTEE MEETING.

June 21-24, 1909.

Executive committee met with all members present. This being the day set for receiving bids for various work at the fair grounds the committee proceeded to open bids as follows: Cattle barn, completion of the swine pavilion, stage for band, stage for vaudeville, and balcony in the Agricultural building. Bids received were as follows:

Cattle Barn—	
P. A. Callen	$5,189.00
(If one foot less foundation is used, deduct $125.00).	
Chas. Weitz' Sons	5,200.00
Painting—	
J. E. Graham	110.00
Swine Pavilion. General Contract—	
Chas. Weitz' Sons	5,733.00
(Deduct $563.00 for floors in pens).	
J. E. Lovejoy	6,650.00
(Deduct $475.00 for floors in pens).	
Plumbing—	
Edwin Cutler Plumbing Co.	770.00
($20 00 added for increase of size of cess-pool.)	
Pray & Comerford	1,022.32
Balcony in Agricultural Building. General Contract—	
J. E. Lovejoy	975.00
Chas. Weitz' Sons	792.00
R. H. Baldrich	844.00

Steel Work—

Dodd Steel & Iron Works	1,846.00
Des Moines Bridge & Iron Works	1,800.00

Stage for band stand—

J. E. Lovejoy	875.00
P. A. Callen	1,138.00
Chas. Weitz' Sons	1,289.00
R. H. Baldrich	1,282.00

Stage for Vaudeville—

J. E. Lovejoy	1,280.00
P. A. Callen	1,251.00
Chas. Weitz' Sons	1,620.00
R. H. Baldrich	1,323.00

After carefully examining all bids received the following awards were made:

For the construction of the cattle barn contract was awarded to P. A. Callen at his bid of $5,064.00, after the depth of the concrete foundations had been changed from four to three feet. Secretary was authorized to enter into contract with Mr. Callen at once.

Contract for completion of the swine show pavilion was awarded to Chas. Weitz' Sons; the total amount of their contract after deducting $563.00 for the omission of cement floors in pens being $5,170.00.

Contract for plumbing in the swine pavilion was awarded to the Edwin Cutler Plumbing Company at their bid of $770.00, plus $20.00 for increasing size of cess-pool.

Contract for steel work in connection with the balcony in the Agricultural building was awarded to the Des Moines Bridge & Iron Company at their bid of $1,800.00. The general contract, including cement piers and carpenter work, was awarded to Chas. Weitz' Sons at $792.00.

Contract for band stage was awarded to J. F. Lovejoy at his bid of $875.00, and for the vaudeville stage to J. E. Lovejoy at $1,280.00, the owner in both instances to furnish dimension lumber and rough lumber for the floor of the vaudeville stage.

Secretary was authorized to purchase screens and doos for the second floor of the Administration building from the Burroughs Screen Company at their bid of $126.70, f. o. b. Des Moines.

Executive committee authorized the secretary to pay Miss Elsie Colton $100.00 per month to September 1st, when the matter would be referred to the board.

The following warrants were issued in payment for services attending committee meeting:

No. 7127	C. E. Cameron	$30.00
No. 7128	W. C. Brown	26.20

IN VACATION.

June 25, 1909.

Warrant No. 7129 for $30.00 issued to J. I. Myerly in payment for postage on "Greater Iowa." Also warrant No. 7130 for $2.23 issued to C. M. & St. P. Ry. Co. in payment for freight on fixtures for cooping in the Poultry building.

June 26, 1909.

Warrant No. 7131 for $900.00 issued to Potts Bros., being second estimate and payment on cement walks.

June 28, 1909.

Warrant No. 7132 for $40.00 was issued to B. W. Crossley for postage on account of Educational Exhibit of Farm Crops. Also warrant No. 7133 for $851.21 issued to Jas. H. Deemer, account of labor pay roll at the fair grounds for June 6-21.

June 29, 1909.

Warrant No. 7134 for $53.43 was issued to A. Olson, account of laying shingles on speed barn.

June 30, 1909.

Warrant No. 7135 for $50.00 issued to J. I. Myerly for postage. Also warrant No. 7136 for $150.00 issued to J. M. Fredregill in payment of contract for laying foundations under speed barns. The following warrants were issued in payment for office services during the month of June:

No. 7137	A. R. Corey	$100.00
No. 7138	J. C. Simpson, extra services, clerk executive committee	100.00
No. 7139	Clifford Heer	44.00
No. 7140	Edith Smith	65.00
No. 7141	Elsie Colton	100.00
No. 7142	Jas. H. Deemer, superintendent of grounds	83.33
No. 7143	Ora Williams, Chief Department of Publicity	120.00

Also warrant No. 7144 for $100.89 was issued in favor of Geo. D. Dobson, being balance for services on engineering work on track and for engineer's services on walks, curbs and gutters. Also warrant No. 7145 was issued for $5.00 to A. E. Holmes, engineer.

for services cross-sectoning bridge. Warrant No. 7146 for $50.00 was issued to W. S. Erwin in payment of services for sawing lumber from amphitheatre.

July 3, 1909.

Warrant No. 7147 for $161.40 issued to Dowd Bros. in payment for filling speed barns.

EXECUTIVE COMMITTEE MEETING.

July 6, 1909.

Committee met with all members present. Mr. Barnes, of the firm of Barnes Bros., who had contract for grading the new race track appeared before the committee and asked that payment be made on account of work to date. Secretary was authorized to issue warrant for $5,000.00 to Barnes Bros. on account.

The committee examined the samples of folding chairs which had been submitted for use in the boxes at the amphitheater and after looking them over it was decided to purchase 43 dozen of No. 97 folding chairs, being with steel frame, from Davidson Bros., at the price submitted, $14.00 per dozen, total amount of contract $602.00.

Secretary presented the advisability of substituting cement instead of wood for risers and treads on front steps leading into the amphitheater and informed the committee of the poposition of the Des Moines Bridge & Iron Company to make such substitution for $125.00. It was decided to accept of their proposition and secretary was instructed to so notify the Des Moines Bridge & Iron Company.

Warrant No. 7148, for $5,000.00, was issued to Barnes Bros. on account of grading work.

IN VACATION.

July 7, 1909.

Warrant No. 7149, for $175.14, issued to B. W. Crossley in payment of expenses for month of June and postage on account of the Educational Exhibit of Farm Crops.

July 8, 1909.

Warrant No. 7150, for $15.17, issued to the C. & N. W. Ry. Co. in payment of freight on lawn seats.

July 9, 1909.

Warrant No. 7151, for $6.43, issued to C. & N. W. Ry. Co. in payment of freight. Also warrant No. 7152, for 40c, issued to C. & N. W. Ry. Co. in payment of freight.

July 12, 1909.

Warrant No. 7153, for $38.00, issued to C. E. Cameron, expenses and per diem of committee meeting. Also warrant No. 7154, for $34.20, to W. C. Brown, expenses and per diem for committee meeting. Warrant No. 7155, for $65.25, issued to J. F. Fredregill, in payment for laying foundations under speed barns and other buildings on the fair grounds. Warrant No. 7156, for $38,000.00, issued to the Des Moines Bridge & Iron Company, being first payment on estimate on account of amphitheater. Warrant No. 7157, for $43.75, issued to A. Olson, account of contract for laying shingles on speed barns. Also warrant No. 7158, for $1,097.85, to J. H. Deemer, superintendent of grounds, in payment for pay roll for labor, June 21 to July 6.

July 14, 1909.

Warrant No. 7159, for $26.40, issued to John Ledgerwood, payment of per diem and mileage while looking after work in the Machinery department.

July 15, 1909.

Warrant No. 7160, for $24.75, issued to Lozier, the florist, in payment for bill for plants and shrubbery purchased for the fair ground.

July 17, 1909.

Warrant No. 7161, for $500.00, issued to Potts Bros., being third payment on account of contract for laying cement walks.

EXECUTIVE COMMITTEE MEETING.

July 20, 1909.

Committee met with Mr. Cameron and Mr. Simpson present.

The contract with the Edwin Cutler Plumbing Company for plumbing in the swine pavilion was annulled on account of contractor not complying with the terms of the contract.

Contract was entered into with the Pray & Comerford Plumbing Company for plumbing and sewer work in the swine and stock pavilion at the state fair grounds.

Contract for building judges' stand was awarded to the Des Moines Bridge & Iron Company at their bid of $250.00 complete.

Warrants were issued as follows:

No. 7162	Iowa State Register and Farmer, advertising	$188.00
No. 7163	C. E. Cameron, special committee work	34.00

IN VACATION.

Warrants were issued as follows:

Date.	Claim No.		Amount.
7-21	7164	Geo. D. Dobson, engineering work, curbs and gutters.	$ 195.00
7-23	7165	J. I. Myerly, postmaster, postage on "Greater Iowa"	28.00
7-24	7166	Frank Leslie, electrical work	16.80
7-24	7167	J. I. Myerly, postmaster, postage stamps	50.00
7-26	7168	A. Olson, laying shingles on barns	13.40
7-28	7169	J. C. Thornburg, oats for forage department	34.95
7-28	7170	D. F. Sheehan, expenses special committee work, Agricultural department	10.14
7-28	7171	J. H. Deemer, superintendent pay roll, July3-18	1,023.13
7-30	7172	P. A. Callen, first estimate on cattle barn	2,000.00
7-30	7173	W. C. Brown, special committee work	58.20
7-31	7174	Potts Bros., walks and curbs	1,298.49
7-31	7175	Clifford Heer, services extra clerk for July	52.00
7-31	7176	H. C. Pelton, services extra clerk for July	57.50
7-31	7177	Ora Williams, salary superintendent of Publicity dept	120.00
7-31	7178	Lily B. Jesup, extra clerk	27.00
7-31	7179	Edith Smith, extra stenographer	65.00
7-31	7180	A. R. Corey, salary for July	100.00
7-31	7181	Jas. H. Deemer, salary for July	83.33
7-31	7182	J. C. Simpson, extra services clerk executive com	100.00
7-31	7183	Elsie Colton, extra services	25.00
7-31	7184	W. H. Simpson, advertising Marion county	24.40

EXECUTIVE COMMITTEE MEETING.

August 10-16, 1909.

Members present, Cameron, Brown and Simpson.

The secretary explained the situation with regard to shortage of stalls in the horse and cattle departments and pens in the sheep deparment. The best manner in which to proceed that stable room might be provided for all stock entered was gone over carefully. Superintendent Curtiss of the horse department and Superintendent Pike of the sheep department met with the committee to assist in the work It was decided to construct in a permanent manner an additional section to the horse barns by roofing over the space between the two sections already constructed, this additional section to eventually be the vehicle and harness room, but for the present temporary stalls were to be put in; this would add capacity for about ninety head of horses. The committee instructed Architect Smith to complete his plans for this work.

Proposals for the construction of the new section to the horse barn were received on Thursday, Aug. 12th, and contracts awarded as follows:

For the building of the front brick wall as per plans to W. H. Brereton, at	$ 990.00
For the structural iron work as per plans to the Des Moines Bridge & Iron Company, at	1,650.00
For the balance of the work as per plans (except masonry and structural iron) to Chas. Weitz' Sons, at	2,400.00

(It should be stated that owing to the short period of time elapsing before the opening day of the fair, time could not be taken to advertise for bids. The proposals received were by the committee deemed reasonable, and contracts were therefore let as above stated for the various portions of the work.) The committee instructed the superintendent of grounds to build in temporary stalls and have the barn filled. All work was to be completed and the building ready for occupancy Friday, Aug. 27th.

Order was made on the State Auditor for the balance due on the appropriation for the amphitheater, $35,000.00.

IN VACATION.

Warrants were issued as follows:

Date	Claim No.		Amount
8- 4	7185	J. I. Myerly, P. M., postage stamps	$ 50.00
8-10	7186	McRae Construction Co., first estimate on walks	758.92
8-10	7187	J. T. Fredregill, cement work	75.00
8-11	7188	W. H. Reed, advertising Kossuth county	15.00
8-12	7189	J. I. Myerly, postmaster, postage	50.00
8-14	7190	B. W. Crossley, postage, agricultural exhibit	30.00
8-14	7191	W. H. Lewis, extra clerk, Aug. 1-14	36.00
8-16	7192	Frank Yant, wild hay for forage department	57.22
8-16	7193	John Ledgerwood, special committee work	22.40
8-16	7194	W. Deets, sawing lumber	178.79
8-16	7195	C. E. Cameron, executive committee work	46.00

8-17	7197	Switchmen's Union, advertising in program	10.00
8-17	7198	H. H. Johnston, photos of new grand stand	17.00
8-17	7199	Wesley Greene, bill for plants at F. G. and planting same	70.45
8-17	7200	J. H. Welch Ptg. Co., printing post cards	22.50
8-17	7201	B. W. Crossley, expenses agricultural exhibit	138.81
8-17	7202	D. E. Moon, printing window cards, etc	261.85
8-17	7203	Mason Varley, services engineering work	87.10
8-18	7204	R. L. Allen, advertising Wright county	10.35
8-18	7205	A. W. R. Boller, advertising Story county	25.00
8-18	7206	Edward Beard, advertising Hancock county	12.00
8-18	7207	J. M. Fredregill, contract for kitchen, Adm. bldg.	32.00
8-18	7208	T. F. Callahan, advertising Humboldt county	20.00
8-18	7209	Edward Frondell, advertising Benton county	12.00
8-18	7210	Chas. Fletcher, advertising Iowa county	16.00
8-18	7211	Henry E. Gerdes, advertising Warren county	15.00
8-18	7212	Geo. A. Hitchcock, advertising Johnson county	10.00
8-18	7213	L. C. Huffman, advertising Decatur county	12.00
8-18	7214	W. H. Krebs, advertising Carroll county	15.00
8-18	7215	Chas. F. Leach, advertising Davis county	12.00
8-18	7216	James Nowak, advertising Poweshiek county	10.00
8-18	7217	Thos. McLaren, advertising Marshall county	12.00
8-18	7218	C. K. Nelson, advertising Winnebago county	10.00
8-18	7219	G. W. Patterson, advertising Webster county	15.00
8-18	7220	Bert Payne, advertising Ottumwa	4.00
8-18	7221	T. C. Reese, advertising Adams county	10.00
8-18	7222	J. W. Richards, advertising Audubon county	12.00
8-17	7196	T. C. Legoe, special committee work (June 11 and Aug. 11)	44.00
8-18	7223	Ed. Scarborough, advertising Jasper county	20.00
8-18	7224	Carl Shields, advertising Union county	15.00
8-18	7225	C. H. Wagerslev, advertising Buena Vista county and surrounding territory	30.00
8-18	7226	N. C. Wragg, advertising Dallas county	8.00
8-18	7227	C. C. Ward, advertising Lucas county	15.00
8-18	7228	D. M. Bridge & Iron Works, second estimate on grand stand	25,000.00
8-18	7229	McRae Construction Co., second estimate on cement work	800.00
8-18	7230	Pray & Comerford, plumbing in swine pavilion	600.00
8-19	7231	T. J. Pollock, refund of entry in speed department	18.00
8-19	7232	J. I. Myerly, P. M., postage	50.00
8-19	7233	J. H. Deemer, Supt. pay roll, July 21-Aug. 2	1,087.37
8-21	7234	N. W. Murrow, hay for forage department	264.73
8-21	7235	P. A. Callen, second estimate on cattle barn	2,000.00
8-21	7236	N. W. Murrow, corn for forage department	87.84
8-21	7237	James Atkinson, oats for forage department	117.60
8-23	7238	P. G. Freeman, advertising Buchanan county	15.00
8-23	7239	Sherwood A. Clock, advertising Franklin county	10.00

Warrants Issued—*Continued.*

Date.	Claim No.		Amount.
8-23	7240	W. C. Treloar, advertising Boone county	15.00
8-23	7241	H. S. Martin, advertising Hardin county	15.00
8-23	7242	Fred Frazier, advertising Shelby county	10.00
8-23	7243	B. F. Burwinkle, painting stock pavilion	60.00
8-23	7244	G. W. Strohmeir, advertising Sac county	15.00
8-23	7245	Frank Yant, wild hay	45.28
8-24	7246	Dowd Bros., filling barns	500.00
8-24	7247	Ward Winterowd, straw for forage department	130.38

MEETING OF THE STATE BOARD OF AGRICULTURE.

Board Room, Administration Building, State Fair Grounds.

Wednesday Evening, Aug. 25, 1909.

Board was called to order with President Cameron in the chair and the following members present: Cameron, Simpson, Johnston, Reeves, Packard, Legoe, Ledgerwood, McDonald, Olson and Pike.

Reading of the minutes was postponed until the next meeting.

Secretary was authorized to issue warrants in payment of bills presented when approved by the proper parties.

Other matters pertaining to the fair were discussed.

On motion the board adjourned.

EXECUTIVE COMMITTEE MEETING.

August 26, 1909.

Members present, Cameron and Simpson.

Mr. William Barnes, having the grading contract for the track and amphitheater work appeared before the committee and asked for a second estimate of $4,000.00 on contract. Secretary was instructed to issue warrant in favor of Barnes Bros. for the above amount.

Final settlement with Dowd Bros. for work of filling barns, bridges, etc., was made and secretary instructed to issue warrant fo $343.19, balance due.

MEETING OF STATE BOARD OF AGRICULTURE.

Board Room, Administration Building, State Fair Grounds.

Friday Afternoon, Sept. 3, 1909.

Board met with the following members present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, Curtin, Packard, Curtiss, Ledgerwood, McDonald, Olson, Pike and Gilbertson.

Minutes of the last session of the board in April and of the executive and special committee meetings in vacation were read and approved.

Secretary presented pay rolls as follows:

Art department	$ 492.90
Speed department, including bill of superintendent for expenses incurred attending special committee meeting prior to the fair	590.00
President's department	15.75
Horticultural department	63.85
Floricultural department	64.00
Dairy department	29.50
Press bureau	109.50
Ticket department	304.50
Horse department, including judges and ring master for night show in the stock pavilion	890.50
Treasurer's department, including ticket sellers, guards, etc., also rental of automobile	1,121.21
Admissions department	2,541.50
Police department	1,715.50
Agricultural department	275.00
Machinery department	317.45
Swine department	477.50
Cattle department	651.50

Mr. McDonald moved that the foregoing pay rolls be allowed, seconded by Mr. Curtiss. Motion prevailed.

Mr. Curtiss offered the following additional rule for the premium list of 1910, to apply to the horse department unless the board saw fit to include it in other departments:

> "Special prizes will not be accepted for classes that do not conform to the regular classification for the department in which they belong unless for urgent reasons satisfactory to the executive committee and the superintendent of the department in which they are offered. Specials must carry money prizes or articles of intrinsic value. Cups, medals or other articles offered as specials must be in the hands of the secretary on the opening day of the fair or awards will not be made."

The matter was discussed and on motion the rule was extended to include all departments and carried.

The following pay rolls were presented, and on motion of Mr. Olson were allowed:

Concessions department, for ticket takers	$558.00
Sheep and poultry departments	439.00

The president appointed as committee on per diem and mileage Mr. Ledgerwood, Mr. Pike and Mr. Curtiss, to report at next meeting.

On motion the board adjourned.

EVENING SESSION.

September 3, 1909.

Board met with the following members present: Cameron, Brown, Simpson, Johnston, Reeves, Curtin, Legoe, Curtiss, Ledgerwood, McDonald, Olson and Pike.

The following pay rolls were presented and on motion same were allowed:

Forage department	$444.50
Privilege department, for office assistants	168.00
Administration building	241.25
Secretary's department, including office assistants for the month of August	573.50

The following bills for special committee work were also presented and ordered paid:

E. J. Curtin, 2 days at $4.00, 207 miles at 10c, July 27-28	$28.70
H. L. Pike, 4 days at $4.00, 200 miles at 10c, Aug. 12-15	36.00

Committee on per diem and mileage reported as follows, and upon motion of Mr. Ledgerwood, seconded by Mr. Johnston, the report was adopted and warrants ordered drawn for the amounts named:

Name	Days	Rate	Amount	Miles	Amount	Total
C. E. Cameron	22	$4.00	$ 88.00	140	$14.00	$102.00
W. C. Brown	42	4.00	168.00	102	10.20	187.20
R.S. Johnston	18	4.00	72.00	158	15.80	87.80
C. W. Phillips	19	4.00	76.00	210	21.10	97.10
Elmer M. Reeves	20	4.00	80.00	123	12.30	92.30
E. J. Curtin	17	4.00	68.00	207	20.70	88.70
S. B. Packard	26	4.00	104.00	58	5.80	109.80
T. C. Legoe	20	4.00	80.00	85	8.50	88.50
Chas. F. Curtiss	19	4.00	76.00	37	3.70	79.70
John Ledgerwood	27	4.00	108.00	64	6.40	114.40
M. McDonald	20	4.00	80.00	65	6.50	86.50

O. A. Olson	21	4.00	84.00	155	15.50	99.50
H. L. Pike	20	4.00	80.00	200	20.00	100.00
G. S. Gilbertson	..	.....	....	...	......	24.00
J. C. Simpson	..	.....	....	...	......	24.00

Respectfully submitted,

John Ledgerwood,
H. L. Pike,
C. F. Curtiss,
Committee on Per Diem and Mileage.

On motion the boad adjourned.

MEETING OF STATE BOARD OF AGRICULTURE.

Board Room, Administration Building, State Fair Grounds.

September 4, 1909.

Board met with the following members present: Cameron, Brown, Simpson, Johnston, Curtin, Packard, Legoe, Ledgerwood, McDonald and Pike.

Mr. Gilbertson moved that the salary of Miss Colton be made $100.00 per month. Motion prevailed.

Mr. Ledger wood moved that all unfinished business be delegated to the executive committee with power to act. Motion prevailed.

On motion the board adjourned.

MEETING OF AUDITING COMMITTEE.

September 20-24, 1909.

Members present, Johnston, Phillips and Legoe.

The committee examined and audited the accounts and bills filed from December 1, 1908, to Sept. 20, 1909, as per bills on file in this office.

Warrants for per diem and mileage were issued as follows:

No. 7407	R. S. Johnston, 4 days at $4.00, 158 miles at 10c	$31.80
No. 7408	T. C. Legoe 4 days at $4.00, 83 miles at 10c	24.30
No. 7425	C. W. Phillips, 4 days at $4.00, 210 miles at 10c	37.00

IN VACATION.

September 25-28, 1909.

Warrants as follow were issued on claims audited and approved by the auditing committee at their meeting Sept. 20-24:

Warrants Nos. 7409-7412, 7414-7416-7419, 7421-7427, 7429-7437, 7439-7447, 7449-7567.

Warrants in payment of contracts were issued as follows:

Claim No.		Amount
7413	Empire Cooping Co., coops for poultry building	$ 1,849.09
7417	J. E. Lovejoy, band and vaudeville stages	2,312.63
7418	Des Moines Bridge and Iron Works, 3d estimate on Amp.	15,250.00
7420	American Seating Co., seats for amphitheater	691.22
7428	Pray & Comerford, plumbing in swine pavilion	622.74
7438	Chas. Weitz, balcony and agricultural bldg., swine pavilion and extra on amphitheater	6,303.90
7448	Davidson Bros., furniture for administration building	4,217.27
	September 30.	
7568	J. Hoppes, nightwatch at amphitheater	44.00
7569	J. C. Simpson, salary clerk Ex. Com	100.00
7570	A. R. Corey, salary for September	100.00
7571	J. H. Deemer, salary for September	83.33
7572	Edith Smith, salary for September	55.00
7573	Elsie Colton, balance salary for September	25.00
7574	L. M. Hawn, advertising Grundy county	15.00
7575	County Newspaper, advertising account	2,291.08
7576	Lela Lupher, first prize, I. S. C. contest	10.00
7577	Alta Cooper, second prize, I. S. C. contest	5.00
7578	I. S. Bailey, Jr., advertising Poweshiek county	20.00
7579	J. P. Mullen, advertising Pocahontas county	10.00
7580	W. B. Kearns, advertising Hamilton county	15.00
7581	Geo. B. Grimes supplies for administration dining hall	5.50
7582	W. Burzacott, order books	1.20
7583	The American Sportsman, advertising speed program	15.75
7584	Chase & West, pillows and mattresses for administration building	17.00
7585	Musgrave Fence Co., gates and fencing	65.75
7586	W. C. Brown, special committee work	64.10
7587	E. R. Harlan, expense Old Settlers' Day	2.25
7588	J. I. Myerly, P. M., postage	20.00
7589	Register and Leader, printing and engraving	137.90
7590	J. C. Simpson, to balance propertymen's pay roll	5.00
7591	Chas. Patti, firing boiler, dining hall	20.00
7592	D. C. Thompson, repairing plow	2.00
7593	H. H. Simpson, setting up chairs in amphitheater	33.00
7594	J. C. Simpson, expenses to Sedalia, Mo	27.55
7595	J. H. Deemer, superintendent's pay roll	860.87
7596	Iowa State College of Agr. and Mechanic Arts, one-half expense college exhibit	121.85
7597	R. S. Johnston, special committee work	24.00
7598	C. E. Cameron, special committee work	36.30

7599	Henry Lefebure, refund of stall rent	2.00
7600	Bastian Bros. Co., premium ribbons and special badges	578.79
7601	O. O. Smith, architect's fees	1,612.43
7602	McRae Construction Co., third estimate on walks	600.00
7603	P. A. Callen, balance on cattle barn	1,064.00
7604	Guarantee Electric Co., freight and cartage on generator	60.67
7605	C. E. Cameron, special committee work	26.00
7606	Jas. H. Deemer, salary for October	83.33
7607	A. R. Corey, salary for October	100.00
7608	Elsie Colton, balance salary for October	25.00
7609	Edith Smith, salary for October	65.00
7610	A. V. Storm, superintendent's pay roll, educational dept.	148.46
7611	Robt. H. Hilderbrand, photographs	294.20
7612	J. C. Simpson, salary clerk executive committee	100.00
7613	Potts Bros., combined curb and gutter	144.00
7614	F. Fountain, scavanger work military tournament	25.00
7615	Centaur Wire and Iron Works, ornamental iron fence Amp	600.00
7616	L. F. McCray, firing boiler at dining halls	16.00
7617	W. M. Clark, secretary, dues Iowa Fair Managers Assn.	4.00

EXECUTIVE COMMITTEE MEETING.

October 22-23, 1909.

Members present, Cameron and Simpson.

The committee with Architect Smith and Superintendent of Grounds Deemer inspected the building being constructed at the fair grounds. P. A. Callen having notified the secretary that he had completed his contract for the construction of the cattle barn. this building was inspected and accepted and secretary authorized to issue warrant to P. A. Callen in final settlement for said contract.

Secretary was instructed to place insurance on the furniture in Administration building also look into the matter of getting insurance on amphitheatre chairs stored in the two cattle barns; also to place wind storm insurance on the amphitheatre.

Secretary was authorized to issue warrant to O. O. Smith, architect, for $1,612.00, being final payment in full for his services in making plans and specifications and superintending the construction of various buildings set out in the bill.

EXECUTIVE COMMITTEE MEETING.

November 4-5, 1909.

Committee met with members Cameron and Simpson present.

Secretary having received notice from the Des Moines Bridge & Iron Works, that they had completed their contract for building amphitheater and desired a settlement, the meeting was called for this purpose. The committee, together with Architect Smith, Messrs. Moss and Brown from the Des Moines Bridge & Iron Works, and Superintendent of Grounds Deemer, made a very thorough inspection of the amphitheater. After this inspection the members of the executive committee pointed out wherein the work was not up to that called for under the specifications. They insisted upon these parts being gone over and finished as per plans and specifications and all in a workmanlike manner. (Instructions set out in detail and copy on file in secretary's office.)

Additional payment on contract for amphitheater was asked by the Des Moines Bridge & Iron Works. Secretary Simpson reported a balance due of $4,317.00 and was instucted to issue warrant to an amount which would leave a balance due of $1,500.00, which was not to be paid until all parts of the work on amphitheater had been accepted.

Warrants were ordered drawn on claims as follows:

Claim No.		Amount
7618	C. E. Cameron, executive committee work	$ 26.00
7619	J. R. Peak & Son, premimus, horse department	25.00
7620	Am. Association Fairs and Expositions, dues	25.00
7621	Jas. H. Deemer, superintendent's pay roll	495.54
7622	C. & N. W. Ry. Co., freight	.40
7623	American Express Co., bills for September and October	4.82
7624	Adams Express Co., bill for September	.20
7625	A. R. Corey, Mdse	4.43
7626	John T. Christie Co., insurance premiums	50.00
7627	B. W. Crossley, expense agricultural exhibit	164.84
7628	John Collins, balance on contract wiring amphitheater	107.00
7629	Des Moines Water Co., bills for Sept. and Oct	226.54
7630	J. E. Graff, drugs for rest cottage	4.70
7631	Globe Mchy & Supply Co., supplies	12.90
7632	Holmes-Irving Co., watch and medal, butter contest	42.50
7633	Hawk Bros., laundry, laundry work, uniforms and table linen	2.10
7634	Iowa Telephone Co., bills for Sept. and Oct	5.25
7635	International Harvester Co., disc	24.50
7636	Chas. Irvin, first and second premium groom for team	45.00

7637	Jewett Lumber Co., cement	21.60
7638	Iowa Lithographing Co., certificates	35.00
7639	Mutual Telephone Co., telephone rental	8.25
7640	J. H. Queal & Co., lumber	26.00
7641	Eva Vieser, engrossing diplomas and photographs	1.15
7642	Western Union Telegraph Co., messages	4.45
7643	Wells Fargo & Co., bill for Oct	.42
7644	Wilcox-Howell & Hopkins Co., insurance premiums	400.63
7645	Younker Bros., framing pictures	13.70
7646	J. C. Simpson, salary clerk Ex. Com	100.00
7647	Jas. H. Deemer, salary for November	83.37
7648	A. R. Corey, salary for November	100.00
7649	Elsie Colton, balance salary for November	25.00
7650	Miss K. Baumgardner, refund on exhibitor's ticket	2.00
7651	Jas. H. Deemer, superintendent's pay roll	227.61
7652	G. S. Gilbertson, treasurer's salary for 1909	100.00
7653	J. C. Simpson, secretary, to balance pay roll account	4.30

IN VACATION.

December 8, 1909.

Warrant No. 7654 for $15.00 issued to W. R. Mellor, secretary of the Nebraska State Board of Agriculture, in payment of expense in attending State Agricultural convention.

December 9, 1909.

Warrant No. 7655 for $17.00 issued to John Ledgerwood in payment of expense attending the Iowa Implement Dealers' Association.

Warrant No. 7656 for $30.00 issued to Martha Baber in settlement for injuries received by reason of seats in the assembly tent collapsing at the last fair.

MEETING OF THE STATE BOARD OF AGRICULTURE.

Thursday, December 9, 1909.

As per call of the president, the board met at 9 o'clock a. m. in the offices of the Department of Agriculture in the Capitol building, with the following members present: Cameron, Brown, Simpson, Johnston, Reeves, Curtin, Wentworth, Legoe, Ledgerwood, Olson, Pike and Wright.

The oath of office was administered to the following newly elected members by the clerk of the supreme court: Cameron, Brown, Johnston, Reeves, Wentworth and Pike.

Minutes of the committee meetings and the last board meeting were read and approved.

The following supplementary report to the board was made by Secretary Simpson:

SECRETARY'S REPORT.

To the Members of the Iowa State Board of Agriculture.

Gentlemen:—My report of yesterday with reference to the transactions of the department was of necessity brief, and I desire at this time, before the board takes up the work of the new year, to give a more detailed report of the finances. In the statement contained in our annual report the total receipts for the year were shown to be $268,893.55; this included the cash balance in the hands of the treasurer December 1, 1908, and the $100,000.00 appropriation for the amphitheater. The receipts from various sources were as follows:

Cash balance Dec. 1, 1909	$ 25,328.73
From State for amphitheater, track, etc.	100,000.00
From state for annual appropriation for insurance	1,000.00
From fees, division of horse breeding	1,065.00
From rental of grounds and concessions, military tournament	952.20
From interest	588.62
From sale of old amphitheater lumber, rental of stock pavilion and grounds and other collections by the superintendent	2,481.21
From miscellaneous sources other than fair	169.89
From receipts, 1909 fair	137,307.40
Total	$268,893.55

The net receipts from sources other than the fair and the $100,000.00 state appropiation were $6,257.42. They are somewhat larger than last year, owing to the money received from the sale of old amphitheater lumber and the rental of grounds and concessions from the military tournament, which amounted in the aggregate to about $2,000.00. In fact, these receipts total about $1,900.00 above our expenses which are not charged against the fair. The ticket sales of the fair show a decrease of $2,889.85 over the sales for the previous year, while the receipts from other sources at the fair show an increase of $1,432.59 over the previous year, making the aggregate receipts of the 1909 fair but $1,457.26 less than for 1908. The falling off in ticket sales was mostly the regular admission, day amphitheater quarter stretch and night stock pavilion tickets. There would have been no decrease in the night stock pavilion ticket sales had the management not been compelled to refund for tickets sold on Monday night owing to the light plant breaking down. The greatest loss was in the regular fifty cent tickets which shows a decreased sale of $4,011.00. Up to Wednesday night the sale of fifty cent tickets was 109,546, against 93,009 the previous year, or equal to about 20% increase. Had the weather been favorable on Thursday we could reasonably have expected the same rate of increased sales to have continued, which would have brought the sale of fifty cent tickets on this day to over 31,000 as against 8,400 sold, a difference of over 22,000 loss. This would also have been true of the day amphitheater ticket sales. Up to Wednesday night these sales showed about a 10% increase over the previous year, while the sales on Thursday were nothing as against 7,737 sold on the corresponding day in 1908, a net loss here of over $2,000.00 alone. While both the regular and amphitheater ticket sales on Friday were larger than for 1908, still the weather conditions were not favorable for a good attendance. Nearly all other kind of tickets sold show an increase over the previous year, notwithstanding the unfavorable conditions. I have made out a comparative ticket statement showing the sale of the various kinds of tickets at the fair of 1908 and 1909, giving he increase and decrease as the case may be.

	1908	1909	Decrease	Increase
Day 50c	$66,435.50	$62.424.50	$4,011.00	....
Day 25c	5,290.00	6,036.25	....	$ 746.25
Evening 25c	1,403.50	1,645.00	....	241.50
Campers	1,434.00	2,050.00	....	616.00
Day amphitheater	7,777.00	6.653.00	1,124.00	....
Day reserved seats	1,218.25	1,299.25	....	81.00
Day box seats	......	557.50	....	557.50
Quarter stretch	875.50	584.25	291.25	....
Night amphitheater	5,830.50	6,355.75	....	525.25
Night reserved seats	1,068.50	1,227.75	....	159.25
Night box seats	....	477.50	....	477.50
Stock pavilion:				
50c	1,595.50	1,636.00	....	40.50
35c	1,286.95	192.85	....	....
25c	....	232.00	862.10	....
25c standing room	680.25	634.00	46.25	....
Total	$94,895.45	$92,005.60	$6,334.60	$3,444.75

DISBURSEMENTS.

While unfavorable weather interferred to some extent in the receipts, it had no such effect on the expenses. The total expense charged against the fair for 1909 at the close of the year was $109,225.08, against an expense of $94,593.21 in 1908; or an increased expense of $14,632.67. Of this increase $6,756.87 was for premiums and expense of exhibits; the balance, $7,675.80 covering the increased expense in nearly all departments of the fair.

I would advise that all revisions for the premium list showing an increase in the premiums offered be first considered by the board and afterwards referred to a committee, said committee to consist of the president, vice-president, secretary and two additional members. This for the reason that at the meeting of the American Association of Fairs and Expositions held in Chicago last week uniform rules and classifications for live stock were adopted, a copy of which will be sent out by the secretary as soon as possible. Then, too, the increases, if any, to be made in the premium list should be considered along with the other expenses of the fair.

IMPROVEMENTS.

As shown by our statement yesterday, warrants to the amount of $150,208.58 had been issued during the past year in payment of improvements at the fair grounds. In addition to this there is still due on contracts amounts aggregating $7,441.74, which will bring the total improvement account up to $157,650.32. Four thousand, six hundred and twenty-two dollars and seventy-six cents of this amount was for balance due on contracts for the season of 1908, leaving the net improvement account for 1909 charged with $153,047.36. This is about $15,500.00 more than anticipated by the board at their meeting last April, at which meeting a schedule of needed improvements, together with an estimate of the cost of each, was submitted by the executive committee. This increase comes in the following items:

Cost of amphitheater and track above appropriation	$ 4,254.20
Additional section to horse barn	6,385.18
Furnishings and additional work at Administration Bldg	2,018.71
Grading	1,833.20
Taking down old amphitheater	802.59.
Excess cost of schedule of improvements submitted over estimates	223.45
Total	$15,517.33

Estimated cost of improvements in schedule presented to board in April over cash available to be taken from fair receipts	$16,718.02
Amount of improvements in excess of available cash Dec. 1, 1908	32,235.35

It was impossible early in the year to forsee or know that the amphitheater cost would exceed the appropriation. As the work proceeded extras were contracted, which were a necessity in every instance. The cost of seating exceeded the estimate, as well as many other things, such as steps, railings, ornamental iron fence, etc.. You are all familiar with the conditions necessitating the additional section to the horse barn. The furnishings, kitchen, etc., are responsible for the item of expense to the Administration building. Grading not included in either track or amphitheater contracts seemed necessary. The cost of taking down the amphitheater was not figured in; it is true the sale from old lumber more than offset this item, still it has to be figured in as an expense. Including the work of the past season improvements to amount of over half a million dollars have been made at the fair grounds within the past nine years, $253,000.00 coming from fair receipts. The final summary shows a net debit to the profit and loss account of $3,314.83.

CONDENSED SUMMARY AT THE CLOSE OF THE FISCAL YEAR, NOVEMBER 30, 1909.

Debit:		
To upaid warrants		$ 287.46
To amounts due on contracts for improvements	$7,441.74	
To claims on file still unpaid	570.88	8,012.62
		$8,300.08
To cash balance		4,985.25
To net debit profit and loss account, Nov. 30, 1909		$3,314.83

At the close of the year the cash balance as shown above was $4,989.25, with unpaid balance on contracts amounting to $8,012.62. Six thousand dollars of this amount will have to be paid within a few days. The executive committee has decided to retain $1,500.00 of the amount due the Des Moines Bridge & Iron Works until certain parts of the work at the amphitheater are made satisfactory, which cannot now be done until spring. The payment of these claims and necessary running expenses and work at the grounds until the next fair will necessitate the borrowing of from $8,000.00 to $10,000.00 prior to the opening of the fair. Loans can be made from time to time and in such amounts as may by the executive committee be deemed necessary. The board should, however, at this meeting, authorize the committee to negotiate said loans. Not much can be done in the way of improvements the coming year; there will, however, be some needed improvements to be made that can be taken care of out of the loans. The financial condition is not at all alarming, for in my judgment it will not be necessary to open the next fair with an indebtedness outside of regular fair expenses of from $8,000.00 to $10,000.00. With a net profit of $38,000.00 in 1906, $25,000.00 in 1907, $44,000.00 in 1908, and $28,000.00 in 1909 with unfavorable weather, there need be no occasion for alarm in regard to our finances. I might have mentioned a few minutes ago that in addition to the quarter of a million dollars put into improvements out of fair receipts in the past nine years, the aggregate amount paid out for increased premiums in that period has been over $90,000.00.

The work of preparing and adopting a permanent arrangement for the grounds is of so much importance that I would deem it unwise to delay action longer, and definite action should be taken by the board at this meeting to commence this work. A number of manufacturing companies are clamoring for space upon which to erect buildings. Locations for these purposes cannot be granted until some permanent plan is adopted. Owing to the fact that not much new work can be done by the board, we believe it is a good time to have some private buildings erected. It is also a fact that the implement and machinery manufacturers were never so prosperous and are in a mood to erect buildings for exhibition purposes, which they will not be at the first indications of a falling off in their trade.

Mr. Legoe offered the following resolution and moved its adoption, which motion prevailed:

Resolved, That the management of the Iowa State Fair be delegated to the Executive Committee together with other members of the State Board of Agriculture, as provided in Section 1657-I of the Supplement to the Code of Iowa.

The board proceeded to elect a secretary and a treasurer for the ensuing year.

Mr. Legoe moved that J. C. Simpson be elected secretary for the ensuing year and that the compensation for his services be the same as for the past year. Motion prevailed.

Mr. Curtin moved that G. S. Gilbertson be elected treasurer for the ensuing year and that his salary be the same as for the past year. Motion prevailed.

A communication from Mr. Grant Stahl, Diagonal, Iowa, relative to inspection of foods at the various eating places at the state fair grounds during the fair, was presented by the secretary and on motion, duly seconded and carried, was referred to Mr. Wright, State Dairy and Food Commissioner.

Secretary presented communication from the Iowa Equal Suffrage Association relative to a Woman Suffrage Day at the fair, etc. On motion of Mr. Curtin communication was ordered placed on file and further action upon same referred to the executive committee with power to act.

A communication from the North Iowa Fair Association at Mason City was read, relative to the acceptance of exhibits arriving at a later hour than provided in the rules, that exhibits might be held longer at their fair which they desired to hold the week of the opening days of the Iowa State Fair. Motion was offered and carried that no exception to the published rules be granted.

The advisability of having an Editorial Day at the fair, upon which day the editors of the state should be the guests of the fair management, was discussed at length, and on motion, final action was referred to the executive committee with power to act.

Secretary Simpson read to the board a communication from gentlemen who had charge of the government exhibit and demonstration work for the Reclamation Service at the last fair, asking that the $200.00 paid for space occupied by said exhibit be refunded. On motion of Mr. Ledgerwood the request was not granted, and the secretary was instructed to so notify them.

Secretary presented communication from Mrs. Martha Baber of Avon, Iowa, claiming damages to the amount of $50.00 on account of injuries received by the falling of the temporary seats placed in the assembly tent for use at the program on Soldiers' Day. On motion of Mr. Curtin, duly seconded by Mr. Olson, the communication and claim was referred to the executive committe with power to act.

Secretary presented communication and claim from Miss K. Baumgartner of West Union, Iowa, with reference to the loss of certain articles of fancy work sent for exhibit at the last fair. On motion of Mr. Johnston, duly seconded by Mr. Reeves, the communication and claim was referred to the executive committee for settlement with full power to act.

On motion of Mr. Johnston, the board adjourned until 1:30 p. m.

AFTERNOON SESSION.

Thursday, December 9, 1909.

Board met at 1:30 p. m. pursuant to adjournment with the following members present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, Curtin, Wentworth, Legoe, Curtiss, Ledgerwood, Escher, Olson, Pike and Wright.

Messrs. Curtiss and Escher were sworn in as members of the State Board of Agriculture for the ensuing two years by the clerk of the supreme court.

Mr. W. B. Barney and Mr. E. R. Shoemaker, representing the Iowa State Dairy Association, were present and addressed the board with reference to and in the interests of the exhibit of dairy cattle at the state fair. They asked that one of the assistant superintendents of the cattle department be someone in close touch with the dairy breeds.

Mr. Simpson read a communication from Hon. Frederick Larrabee relative to requiring the tubercular test of all cattle exhibited at the Iowa State Fair. On motion, duly seconded, the communication was ordered placed on file.

On motion of Mr. Ledgerwood the following named parties were to be recommended to the Superintendent of Public Safety to act as marshals at the next fair:

C. M. Akes of Leon,
Carl Shields of Afton,
T. J. Hudson of Winterset.

The schedule of pay for employes at the fair was considered. Mr. Johnston moved that the matter of police regulation be submitted to the executive committee and the superintendent of public safety and admissions for a thorough reorganization. Seconded by Mr. Legoe. Motion prevailed.

Mr. Johnston then moved that the matter of wages for the various members of the police department be referred to a committee of three, to report tomorrow. Motion prevailed. The president appointed as the committee Messrs. Johnston, Olson and Legoe.

The election of the superintendent of grounds was next taken up. Mr. Curtiss offered the following resolution, which was adopted:

Resolved, That it is the sense of this Board that the system of making purchases, employment of labor, keeping time and accounts, for the care, maintenance and minor improvements on the state fair grounds and buildings be so revised that all work of this kind come under the direct supervision of the executive committee, and that purchases be made on requisition by the executive committee, and all bills be filed with the executive committee for approval and payment in the same manner as all other claims against the state fair, and that a committee of two be appointed to act with the executive committee in formulating such a system, with power to act, and report to board at its next meeting.

Mr. Curtiss made the following motion:

Moved, That the executive committee be authorized to employ a superintendent of grounds for the ensuing year at a salary of one thousand dollars ($1,000.00) per year and free house rent and garden plot, down wood for fuel, and free pasturage for six cows or horses.

Motion seconded by Mr. Johnston, and prevailed.

The president appointed on the committee to act with the executive committee on the above resolution, Messrs. Curtiss and Olson.

Mr. Legoe moved that the fair dates for 1910 be Thursday, Aug. 25th to Sept. 2d, inclusive; seconded by Mr. Curtiss. Motion prevailed.

Mr. Legoe moved that no admission to the fair be charged on Thursday, August 25, and that the general admission for Friday, August 26, and Sunday, August 28, be fixed at twenty-five cents (25c) and on the remainder of the days, 50c. Motion prevailed.

On motion of the secretary the following dates and time for closing of entries was agreed upon:

For live stock departments, Monday, August 1, 1910.

For poultry and educational departments, Monday, August 22, 1910.

In all other departments (except speed), Thursday, August 25, 1910, at 10 p. m.

Mr. Simpson moved that live stock exhibits must be on the grounds not later than 9 o'clock a. m., Saturday, August 27th, and that all other exhibits, except as otherwise provided, must be on the grounds not later than 6 o'clock p. m. Friday, August 26th. Motion prevailed.

Mr. Curtiss offered the following amendment to Rule 22 as it appears in the premium list of 1909 and moved its adoption, which motion prevailed:

Amendment. Cash premiums awarded in sheep and swine departments will be paid on Friday, September 2d, at 9 o'clock a. m., and in the horse and cattle departments at 2:30 o'clock p. m., to all applying for same at secretary's office.

Prof. A. V. Storm, superintendent of the Educational department, presented his report of the work in that department and asked permission to retain it for further editing, which was granted.

To the State Board of Agriculture,
Des Moines Iowa.

Gentlemen:—I herewith respectfully submit to you my report of the school exhibit at the Iowa State Fair and Exposition for the year 1909.

In January, 1909, your board decided to establish a department of school exhibits and arrange for a display of school work at the fair, no such department or display having been made a part of the state fair work in previous years. Upon being appointed to take charge of the work as superintendent I began making plans for a premium list and for methods of publicity. There having been no previous premium list it was necessary to make one entirely new, which was done after an exhaustive study of all procurable premium lists throughout the United States.

These lists showed a marked difference in plans throughout the country. Our premium list as finally issued contained the strongest features of the best lists of the country with additional feautres not found elsewhere, but believed to have significant educational value.

The underlying principals upon which the premium lists were constructed were as follows:

1. Schools were to be confined to the public schools of Iowa.

2. Schools rather than individual pupils were to be exhibitors.

3. All entries were to be made by teachers, principals or superintendents.

4. Four great classes were established, viz., rural schools, elementary grades of town and city schools, high schools, and general collective exhibits from counties, towns and cities.

5. The number of premiums offered was divided almost equally among these four classes, as was also the amount of money appropriated for premiums.

6. Freight charges were paid by the department on all exhibits shipped to Secretary J. C. Simpson before July 1st.

7. No entrance fee or exhibitor's tickets was required.

8. Premiums were paid through superintendents or principals.

9. Premiums were offered on all kinds of regular standard work taught in a majority of the schools if such work were of a nature to permit putting it on exhibition under our present limited facilities

10. Premiums were also offered upon other school work which is not so generally found in schools, but which ought to be more universally introduced; thus pointing the way for future progress in education.

11. The requirements for each premium were so arranged as to reward excellence in general class or school work rather than special skill in some one pupil.

12. Schools were encouraged to send other work not included in the premium list as a suggestion for future improvement.

In giving publicity to the movement county and city superintendents were enlisted in the cause by means of circular letters, copies of premium lists, correspondence and personal interviews.

Copies of the various circular letters issued from time to time are attached to this report. A special edition of the premium list was issued early and widely distributed both from Mr. Simpson's office and my own. Many interviews were held with superintendents regarding the work. There was much sympathy with the work, but there was a general feeling that the time was too short to prepare creditable exhibits so some hesitated to enter. However, a number of superintendents and principals responded right royally and rendered invaluable assistance in making the exhibit a success. J. E. Cundy, the county superintendent of Buena Vista since principal of the public schools of Marathon, was appointed assistant superintendent.

The executive committee assigned for our use the three booths on the north side of the east wing of the exposition building, which was somewhat reduced by our sharing the west booth with the traveling libarary exhibit. This being the first exhibit it was difficult to forcast the amount and kind of exhibits and to prepare properly for them. With the helpful assistance of Mr. Deemer the booths were slightly altered, some old show cases procured and preparation made for displaying and protecting the work. State Superintendent E. C. Bishop of Nebraska was procured to judge the work and place the premiums, which he did to the satisfaction of the exhibitors and the superintendent. I attach hereto a complete report of all premiums awarded. Where there were many entries more placings were made than the number of premiums awarded to provide against possible necessity of moving some up because of error or ineligibility.

Considering all the conditions under which the first exhibit was held the results are highly gratifying and I think the board should be congratulated on creating this department and be encouraged to continue it as a feature of their annual exposition.

If the department be continued another year, as I believe it should be, I desire to make the following suggestions:

1. That the general plan of the premium list be followed.

2. That some slight changes be made therein especially in adding third premiums to several of the numbers in Class 164.

3. That the amount of space be materially increased.

4. That the space be divided into two general divisions, one for miscellaneous exhibits and one for collective exhibits.

5. That the miscellaneous exhibits be grouped in three classes; viz., rural schools, graded schools and high schools.

6. That the space devoted to collective exhibits be divided into small booths and then assigned to individual schools, cities, counties, etc.

7. That the premium list be issued earlier.

8. That that amount of money appropriated to this department be the same as appropriated last year.

In addition to the above suggestions for next year I would like to suggest that in the general plans of the fair for the ensuing year we contemplate the following additional features:

1. A model country school house, grunds, garden, equipment and furnishings.

2. Class rooms in which class exercises illustrative of the best modern teaching can be carried on.

3. Convenience for the comfort of the public while watching these class exercises.

, 4. Special rooms wherein regular industrial work such as domestic science, manual training and agricultural work will be in operation by teacher and pupils.

5. , Covenience for the public to watch this work.

6. Rooms adapted to displaying the results of school work of all kinds including industrial work.

7. Rooms for the exhibition of the best modern text books, note books and other school supplies.

8. That the amount of money appropriated to this department be the as seats, desks, maps, globes, charts, work benches, tools, cooking utensils for schools, etc.

9. Small booths in which the colleges may maintain headquarters.

10. A medium sized auditorium prepared for darkening and supplied with a lantern equipment where slides and moving pictures of school work may be displayed at certain hours every day.

11. Power provided for running such apparatus as must be seen in motion to be appreciated.

When these or any of them are provided our premium list will need to be materially changed and the most marked characteristic of the school display will be its living, moving activity instead of a still life display of results only. This will make it possible to hold conventions of teachers, parents and pupils interested in seeing and discussing the best in modern education.

I have already furnished your secretary, Mr. Simpson, detailed reports of the expense in connection with the work, but append a summary of it here.

In closing this brief report I wish to express my sincere regard for the members and officers of the board and my appreciation of their high ideals regarding the mission of this great educator of the people, the state fair. Only men of broad conceptions, abounding faith, lofty ambitions and clear vision could ever have developed this marvelous exposition to its present and splendid proportions. I wish also to thank all of them for the kind encouragement and generous treatment and cordial co-operation which they have universally extended to me in my efforts to establish this department. My thanks are also due to Mr. T. C. Legoe, superintendent of the exposition building, for the many courtesies and the continuous assistance which the schools department and its officers have received at his hand without which the installing of this new exhibit would have been much more difficult.

I cannot close without a few words of appreciation of the sterling loyalty of those superintendents, principals, teachers and pupils of the state to whose efforts we are entirely indebted for this first exhibit.

Hoping future results will warrant the efforts put forth by all concerned, I beg to remain,

Sincerely yours,
A. V. STORM, Supt. Department.

Mr. Curtiss presented and read the report of the Horse department for the past year and recommendations for revision of premium list for the coming year. On motion the report was ordered placed on file and recommendations for revision of premium list as offered adopted.

REPORT OF HORSE DEPARTMENT.

C. F. CURTISS, SUPERINTENDENT.

The horse department represents one of the great agricultural interests of the middle west. For years wise people have written and spoken learnedly about the passing of the horse. A metropolitan daily paper only recently made the prediction that in the near future horses would be found only in museums as extinct animals. Twenty years ago it was predicted with utmost confidence that the electric street car would put the horse out of business.

Automobiles, bicycles, motor trucks and flying machines may come and go, but the demand for horses is constant and ever present.

These modern means of transportation seem to merely stimulate the demand for good horses. There is every indication that the raising of good horses will constitute a profitable part of agriculture for many years to come.

When the writer took charge of the horse department of the Iowa State Fair four years ago changes were made in the premium list with a view to strengthening the exhibit made by the farmers and breeders instead of making the exhibit chiefly a show by importers as it has been in many state fairs. These changes proved popular at once and resulted in about fifty per cent increase of entries. Some minor changes along the same lines have since been made with gratifying results. The number of horses entered at the Iowa State Fair last year reached nearly 950, setting a new record for all state fairs and exhibitions of this class. A larger percentage of these entries come from the breeders of this state than can be seen from the local breeders at any other state fair. This support should be encouraged to the fullest extent. Premium ribbons are harder to win on horses at Des Moines and mean more than at any other state fair in America.

The Iowa fair was the first to offer a classification for American carriage horses. A similar classification has since been formulated by the cooperation of the United States Bureau of Animal Industry and adopted by sixteen state fairs and expositions. As a result of this movement, the foreign coach breeds, with one exception, have almost entirely disappeared from the American show ring.

The Iowa State Fair offered the first comprehensive classification for market draft horses of different ages with a view of encouraging the farmer who keeps good grade mares and patronizes pure bred sires. Mr. Robert Ogilvie, the judge who passed on this exhibit at the last fair, pronounced it the best exhibit of young stock from the farms that he had ever seen in that kind of a class. With some changes that are contemplated in this class during the coming year I am confident that this exhibit can be improved one hundred per cent at the next show. I am a firm believer in the value of a class that appeals to the practical farmer and that encourages the farmer of moderate means to produce better stock, and bring it out in good form.

Our classification for heavy harness or carriage horses has been rather light. We have not had suitable stable room to accommodate this kind of an exhibit. The stabling is far from adequate yet, though the addition of the two new brick barns with the enclosure of the space between for harness and carriage and hitching room, will afford a great improvement that will strengthen this feature of the show. The completion of the barn which has been begun by the erection of the brick buildings referred to, will provide a magnificent building with stabling for one thousand horses under one roof. Such an exhibit will have an aggregate value of more than $1,000,000.

There has been great congestion in the horse department during the past two years. It has been a difficult problem to find stabling for all of the exhibits and almost equally difficult to find room for judging the numerous large classes. The ponies and mules are judged on Saturday, and during the show week proper it has been found necessary to work four rings in the pavilion and two in front of the grand stand continuously every forenoon in order to complete the work in the allotted time.

The evening shows in the pavilion have constituted a new feature of marked success. The attendance has reached the limit of both seating capacity and standing room nearly every night, and on some nights double the number of tickets could have been sold. At no fair that I have ever attended has there been such marked interest shown in the judging and exhibition of live stock as is manifest at both the daily and evening exhibitions in the coliseum at the Iowa State Fair.

An important feature of any successful live stock exposition is competent and impartial judging. The Iowa State Fair has set high standards in this respect. It has been the purpose of the management to secure men of recognized ability and integrity. Men of this kind command respect and confidence, and contribute largely to the success and educational standards of a modern fair There must be absolute integrity and fair dealing with everyone.

In closing this report I wish to express my hearty appreciation of the interest and co-operation and generous support of officers and members of this board, and my associates in the department, and the exhibitors and patrons who have made the show possible.

(Note—For complete classification for horse department, see premium list for 1910.)

The following resolution was offered and adopted by a unanimous vote:

Resolved, That in view of the interest manifest by the public in the exhibit made by the Iowa State College of Agriculture and Mechanic Arts at previous state fairs, and more especially at the fair of 1909, when a building of suitable area was placed at the disposal of the college to make said exhibit, and for the further reason that these exhibits by the agricultural college are helpful both to the college and to the fair, therefore be it

Resolved, That it is the sense of this board that they will pay one-half of the expense, not exceeding $800.00, that the Iowa State College of Agriculture may incur in installing and maintaining a similar exhibit at the state fair in 1910, and that $800.00 be and the same is hereby appropriated for this purpose.

The president named Mr. Legoe as a member of the standing committee on resolutions to fill vacancy.

The president named as a special committee to draft resolutions to forward to Hon. S. B. Packard, Messrs. Wentworth, Olson and Pike.

On motion the board adjourned to 9 o'clock Friday morning, December 10.

MEETING OF STATE BOARD OF AGRICULTURE.

Friday, December 10, 1909.

Board met at 9 o'clock a. m., pursuant to adjournment, with the following members present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, Curtin, Wentworth, Legoe, Ledgerwood, Escher, Olson, Pike and Wright.

Secretary notified the board of the expiration of the present term of Dr. Geo. M. Chappel, Director of the Weather and Crop Service, in June, and of the further fact that the appointment of said official as provided in Section 1678 of the Code of Iowa was made by the governor upon the recommendation of the State Board of Agriculture.

Mr. Ledgerwood moved that the State Board of Agriculture recommend to the governor of the state for Director of the Iowa Weather and Crop Service, Dr. Geo. M. Chappel, the present incumbent, at the expiration of his present term. Motion prevailed.

The executive committee made the following report upon the assignment of superintendents for the various departments of the fair for the coming year. Upon motion of Mr. Legoe, duly seconded, the report was adopted:

SUPERINTENDENTS OF DEPARTMENTS.

Public safety	E. M. Wentworth, State Center
Tickets	C. W. Phillips, Maquoketa
Admissions	O. A. Olson, Forest City
Concessions and privileges	W. C. Brown, Clarion
Grounds	Jas. H. Deemer, Des Moines
Live stock sanitation	Dr. P. O. Koto, Forest City
Horses, ponies and mules	C. F. Curtiss, Ames
Cattle	H. L. Pike, Whiting
Swine	R. S. Johnston, Columbus Junction
Sheep	Chas. Escher, Jr., Botna
Poultry	Chas. Escher, Jr., Botna
Implements and machinery	John Ledgerwood,Weldon
Agriculture	E. J. Curtin, Decorah
Pantry stores and apiary	E. J. Curtin, Decorah
Dairy	H. R. Wright, Des Moines
Horticulture	E. M. Reeves, Waverly
Floriculture	Wesley Greene, Des Moines
Fine Arts, etc	T. C. Legoe, What Cheer
School exhibits	A. V. Storm, Ames
Speed	A. L. Denio, Alta

The special committee appointed by the president to prepare a letter to be sent to Hon. S. B. Packard submitting the following:

Hon. S. B. Packard,
Seattle. Washington.

Dear Governor:—As the Iowa State Board of Agriculture convenes in annual session, its members individually and collectively miss the face of a friend and keenly feel the loss of an associate whose wise counsel, high character, and rugged, yet kindly personality has endeared him to each and all alike. No words at command can express the deep attachment which we feel for you as a man, or voice the sense of regret that the board feels because removal to a distant state has made it impossible for you to continue the relations that have been so pleasant and valuable to all.

We hope the new friends and environment will be as congenial as the old and the coming years be filled with prosperity and happiness.

Never forget this is home, and we will look forward to your homecomings as one of the keenest delights that can be granted us.

Sincerely yours,

The report of the committee was adopted and the letter signed individually by all members of the board, and forwarded to Mr. Packard, upon motion of Mr. Ledgerwood, seconded by Mr. Johnston, and also spread upon the records of the board.

The special committee appointed by the president to investigate and report upon the question of wages for members of the Department of Public Safety, submitted the following report, which was received, adopted and the committee discharged:

"Your committee to whom was referred the matter of wages for the help in the admissions and public safety departments find that last year there were:

28	Ticket sellers receiving	$3.25 per day
113	Foot policemen receiving	2.50 per day
10	Gate captains receiving	3.50 per day
67	Gatemen receiving	2.50 per day
14	Mounted policemen receiving	3.50 per day
1	Chief of police	55.00 for fair
1	Assistant chief of police	40.00 for fair

The committee does not feel that the employes are receiving enough compensation, but in view of the fact that the department is to be revised and reorganized by a committee already appointed, we would recommend that the pay be left as it is now for the ensuing year.

It is our opinion and belief that in the reorganization the number of police can be reduced, and would recommend that if same can be done that the wages be raised up to the total amount paid the past year.

R. S. Johnston
T. C. Legoe.

Mr. Wentworth moved that the executive committee be authorized and instructed to negotiate loans from time to time as may be required, to an amount not exceeding $15,000.00. Motion was duly seconded by Mr. Ledgerwood and prevailed.

Mr. Simpson presented the following resolution relative to the plan for a permanent arrangement of the state fair and exposition grounds:

Whereas, It is unbusinesslike and inadvisable to further delay the matter of adopting an adequate and permanent arrangement for the Iowa State Fair and Exposition grounds, therefore, be it

Resolved, That the executive committee is hereby authorized and directed to have prepared plans for an adequate and permanent arrangement of said grounds, and the said executive committee is hereby authorized to employ a person or persons who shall have expert knowledge of that subject and shall fix the compensation to be paid for the services rendered. The said executive committee shall on or before the first day of May, 1910, present to the members of the State Board of Agriculture, in meeting, plans so prepared, together with any recommendations in the premises as the said committee shall see fit to make in relation thereto, and be it further

Resolved, That the sum of twenty-five hundred dollars ($2,500.00), or so much thereof as may be necessary, be authorized for this purpose.

Mr. Ledgerwood moved the adoption of the above resolution, which motion was seconded by Mr. Legoe and prevailed.

Mr. Simpson presented and read the report of S. B. Packard, superintendent of cattle for the past year. Report was ordered read and placed on file.

REPORT OF CATTLE DEPARTMENT.

S. B. PACKARD, Superintendent.

Marshalltown, Iowa, Nov. 26, 1909.

MR. J. C. SIMPSON,
Secretary Department of Agriculture,
Des Moines, Iowa.

DEAR SIR:—Responding to your request for a review of the work and suggestions for improvement of the various departments in the exhibits for the coming year, I beg to submit, in connection of the cattle department, some things which might aid in the enlargement of the dairy side of the cattle show. Iowa is largely engaged in the milk production and is at the same time most deficient in the breeding of pure breeds of dairy cattle. It needs but this statement to call attention to a branch of the most profitable pure bred cattle industry that has been overlooked in favor of the beef breed side, which is so thoroughly well established in the state. The dairy pure blood pays its keep with a milk production and its selling price, not less than any of the pure bred of the beef breeds, can be readily seen is all "velvet." The last exhibit of dairy cattle at the state fair was much better and larger than any before it. This was stimulated by the increased classification and more premiums. I suggest that the state board consider a still further increase in premiums for all the dairy breeds, not overlooking the Ayrshires which seems a breed that ought to find a place in view of the great favor that is shown for the breed outside of the state. With liberal premiums and a substantial increase in the stable room to give satisfactory accommodation, I believe many herds of dairy cattle will be put on exhibition from nearby and even remote states and thus give the enterprising Iowa dairy man a chance to see and to study the various breeds that promise in type and milk production to meet the taste and demands of a large inquiring number of visitors from the dairy counties which a big exhibit will be sure to attract. To further specialize such an exhibit it might be well to have the exhibit judged by themselves the first two or three days of the fair. This would relieve the congestion somewhat in the ring and much more contribute to the comfort of the visitors in securing lodging rooms in the earlier part of the fair. The city of Des Moines is taxed much beyond its capacity from Monday to Thursday in caring for the visitors in a manner that suits the taste and comfort of a class that are not willing to take any kind of a rooming place when used at home to a faultless entertainment. Give the dairymen a chance to be in at the first and best days of the fair and they will go to see an exhibit of dairy cattle the best that can be assembled in the country.

At the meeting of the fair association at Chicago I suggested that an agreed rule be adopted requiring, either in 1910 or 1911, that all dairy cattle at least, if not all breeds, be certified as free from tuberculosis as a condition for entry at any show of the fairs.

With assurance of my high regard to each and every officer and member of the best state board in the country, and to all the many exhibitors that have made the Iowa fair the great state fair of the country, I take leave and bid you God speed. Sincerely,

S. B. PACKARD.

Mr. Johnston read his report as superintendent of the Swine department, as follows:

REPORT OF THE SWINE DEPARTMENT.

R. S. JOHNSTON, SUPERINTENDENT.

The swine show at the 1909 Iowa State Fair was the most satisfactory of any of the six with which we have had anything to do. While the number on exhibition was not as great as some other years, the quality was, if anything, of a higher average. Various causes can be attributed to the decrease in numbers. As all who are familiar with the market reports know, there is a shortage in the marketable number of swine in the corn belt; in other words, there are not as many hogs in the country as there were two years ago. It is reasonable to believe that breeders and farmers have made an effort, but from personal inquiry we are lead to believe there were heavy losses in the 1909 pig crop. And again, the high prices of pork prevailing during 1908 sent many a brood sow to the fattening pen. And as the spring in many sections was extremely late and wet, the breeders neglected their show herds in order to cultivate their crops.

The bringing of cheap sale stuff to the Iowa State Fair has been discouraged, and a herd to win premiums at the Iowa fair is not fitted in a day, but requires a long time and lots of corn and attention.

The above are general conditions. Below we give a few of the more local reasons.

For several years there have been more applications for space in the swine department than could be taken care of; and since the erection of the present quarters it has been the policy to refuse space beyond the capacity of the building and large numbers of entries were turned away previous to this year. And we are inclined that some who would have liked to exhibit did not apply for space, thinking there would be no chance to get in. Then again, our present rules prohibit an exhibitor from engaging more than ten pens, and not more than two pens for pigs under six months of age; and he is not allowed to make more than two entries in any one class.

We feel better satisfied with the show of 1909 than any previous year. In fact we cannot see but what the Iowa swine show now leads all others. We speak from some observation and many reports to that effect. The building that houses this great show is conceded by all to be a model for what it is intended. With the present sanitary conditions the breeder takes few chances of disease, as it has been proven that disease contracted before arrival can break out in this building and be kept from spreading. The completion of the show pavilion the present year gave us a chance to carry out a method of judging that we had had in mind for some time, and we are glad to report the plan a complete success, and further state that we believe the judging this year was the most satisfactory to all concerned that we have had in recent years.

While we do not wish to discredit any particular breed of hogs, yet it is our firm belief that the so-called lard hog will always be most in favor in Iowa and the corn belt states, and in view of the fact that over ninety per cent of the hogs at the fair this year were of the four prominent lard breeds, it does not seem equitable that the classification should be the same on all breeds. We would recommend different classifications for various breeds, the bacon hogs to not be materially increased, but in the lard breeds a raise of twenty-five per cent would not be unreasonable.

There were approximately two thousand hogs on exhibition this year, ranking as follows: Durocs, Poland Chinas, Chester Whites, Berkshires, Tamworths, Hampshires and Yorkshires. The Duroc Jerseys or Poland Chinas either one out numbered the other five breeds combined. In 1908 only one herd of Yorkshires was shown, and this year the same herd with a few others, making a total of thirty-four animals, were shown. There is some doubt in our mind whether the Yorkshire classification should be continued. The Hampshire classification being new, we deem it advisable to give them farther chance.

Respectfully submitted,

R. S. JOHNSTON, Superintendent.

Mr. Johnston moved that the classification for the Poland China, Duroc Jersey, Chester White, Berkshire and Hampshire breed be changed, which motion prevailed. (Said changes are published in full in the 1910 premium list.)

Mr. Curtin made a verbal report on the work of the Agricultural department for the past year.

Mr. Wentworth moved that in the matter of revision of the premium list for the Agricultural and Pantry Stores exhibit the same be referred to a committee consisting of the superintendent of the department and the executive committee, and that $2,000.00 additional, or so much thereof as may be necessary, be set aside for the payment of premiums or expense of exhibits for that department. Motion was duly seconded by Mr. Curtin and prevailed, it being understood that the $2,000.00 was to be applied toward an educational exhibit of farm crops and decorations.

Mr. Simpson read a communication from Prof. H. C. Pierce relative to changes and improvements in the Poultry department, also a letter from Mr. E. E. Richards relative to a booth in the Poultry building for the Western Poultry Journal. Mr. Wentworth suggested that Mr. Pike and Mr. Escher take under consideration the matter of solicitors in the Poultry building and report at the afternoon session of the board.

On motion the board adjourned until 1 o'clock p. m.

AFTERNOON SESSION.

Friday, December 10, 1909.

Board convened pursuant to adjournment with the following members present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, Wentworth, Legoe, Ledgerwood, Escher, Olson and Pike.

On motion that a committee on per diem and mileage be appointed, the president appointed Messrs. Johnston, Pike and Brown.

Mr. Pike moved that in the matter of revision of the poultry classification, the classification recommended by H. C. Pierce be adopted. Motion prevailed.

Mr. Ledgerwood, superintendent of the Machinery department, made the following report:

REPORT OF IMPLEMENT AND MACHINERY DEPARTMENT.

John Ledgerwood, Superintendent.

Relative to the fair just closed, the exhibits were increased in all the various lines of machinery and vehicles except that of threshing machines. This increase was especially noticeable in the automobile show. There were also many new mechanical devices shown that were never here befor. The great need of this department is a larger building in which to show the exhibits, but in view of the fact that such a building cannot be had for our fair next year, I beg leave to suggest that at the next annual meeting of the board that we take up, discuss and dispose of the question of landscaping the grounds and decide where the different structures shall be built in the future. Heretofore the location of everything has been held back until the grand stand was definitely located, and as we gain nothing by such delay it would seem that the time has come when a plan should be adopted that any improvements hereafter made should be so constructed as to form part of the harmonious plan for beautifying the grounds and property. For a number of years several of the larger manufacturing companies that exhibit in this department have been anxious to build for themselves a permanent building on the grounds. If the proposition mentioned should be carried into effect I can see no good reason why they should not be allowed to build such buildings. Of course they should be required to submit plans and specifications for the same to the board for its approval. And as a further suggestion, that the land set apart for the exhibits in this department outside of the buildings be surveyed and platted similar to town lots, and permanent iron posts so placed as to designate the corners.

John Ledgerwood,
Superintendent of Machinery Department.

Secretary read several communications from various cement companies relative to the erection of a Cement Industries building upon the state fair grounds. He was instructed to write the various parties that it was the sense of the board that such a building would be a most valuable asset to the grounds, that it was the unanimous opinion of the members present that an exhibit of cement products would in the near future be one of the big features of the fair; that it would be impossible for the board to have such a building erected the present year, owing to lack of funds, but that just as soon as funds were available for this purpose such a building would be erected; and further, that an effort would be made the present season to have all exhibits of cement products centralized.

Committee on Resolutions presented the following resolution relative to the retiring member of the board from the Ninth district; Mr. McDonald:

Whereas, Our esteemed colleague, Mr. M. McDonald, after many years of service on the State Board of Agriculture, deemed it advisable to retire from same; and

Whereas, He has been greatly bereaved by the loss of his beloved wife, the greatest loss that could possibly come to him; now therefore be it

Resolved, That we, the State Board of Agriculture, as a body and as individual friends, extend to him our most sincere sympathy on account of his great bereavement, and while nothing we can do will take from him the burden of his loss, we sincerely wish to do all in our power to lighten his burdens, and we also wish to assure him that wherever he may go on the journey of life our good wishes will always be with him.

E. J. CURTIN,
JOHN LEDGERWOOD,
T. C. LEGOE,
Committee on Resolutions.

The above resolution was received and ordered spread upon the minutes and a copy sent to Mr. McDonald.

Mr. Reeves read the following report of the work in the Horticultural department for the past season, which was ordered placed on file:

REPORT OF HORTICULTURAL DEPARTMENT.

E. M. REEVES, SUPERINTENDENT.

As to the fruit department I can report that there was a good display of all our Iowa fruits and the quality was an improvement over that usually shown. The balcony, used for the first time, gave additional space for exhibits, besides breaking up the monotony of a single floor space and affording a pleasing view of the entire hall.

The premium offered for the first time on commercial package of apples called for much favorable comment and it is recommended that this feature of the exhibit be enlarged upon, as our state is now growing a large value in apples and other fruits to be shipped away and much is lost in price by careless methods in packing the good proportion of the crop.

My experience at the state fair and at the National Horticultural Congress at Council Bluffs shows the necessity of placing a greater value on the quality of the fruit shown. While the standard has been raised to some extent, it still lacks considerable of what it should be as an object lesson to orchardists of the state. Western states have rigid rules as to the grading of fruits and they are generally well enforced, while we have no special rules regarding the sale of wormy or decayed fruit. Fruit exhibits should be in the lead in reforming this lack of system. I am also strongly of the opinion that a full classification of the exhibits as they are placed on the tables will be a great advance over past methods at our fair. This may take more room, but the benefits and convenience will more than offset the added trouble and extra space.

I believe our old list of premiums will be acceptable with but few additions and changes.

E. M. Reeves,
Superintendent of Horticultural Department.

Mr. Reeves moved that all commercial features, sale of nursery stock, etc., be prohibited in the Horticultural section of the Agricultural building. Motion was duly seconded by Mr. Ledgerwood and passed.

Mr. Ledgerwood moved that Mr. Reeves be authorized to revise the premium list in the Horticultural department and add premiums to an amount not exceeding $40.00. Motion prevailed.

Mr. Legoe read the following report on the work of the Art department for the past season, which report was received and ordered placed on file:

REPORT OF FINE ARTS DEPARTMENT.

T. C. LEGOE, SUPERINTENDENT.

THE BUILDINGS.

The Exposition building, as is well known by all the State Board of Agriculture, is in need of considerable repairs in order to get the best results. If a new building cannot be built, then there should be at least a concrete floor put in the old building and it should be painted on the inside and should be made to look more attractive. A concrete floor would be a great improvement, because it would stop the dust nuisance to a great extent and would lessen the fire hazard. The facts are that the fire hazard is so great at present that a great many exhibitors do not like to place articles of considerable value in the building, all of which has a tendency to detract from the exhibit. If a new Liberal Arts building could be built, it would then be possible to make it one of the finest and most popular exhibits on the state fair grounds.

CHINA DEPARTMENT.

A few years ago the part of the Exposition building devoted to this exhibit was greatly improved by putting in glass cases in which to place the exhibits and our china exhibits have increased from year to year, so that at present we have a fine annual exhibit in this department, but we have now reached the limit of space and cannot increase the exhibit unless more space is devoted to it, and more space would be useless unless glass cases were made in which to install the exhibits. However, I will say that our china exhibits are good and more interest is being taken in same from year to year, and I do not know of anything that can be done to make the exhibit more attractive except to increase the show space and provide same with additional cases in which to install the exhibit. Any improvements in the building, such as a concrete floor, will add to the attractiveness of the exhibit. There is this fact to be taken into consideration in the matter of all exhibits, and that is the more attractive the exhibition space is made the better the exhibits will show up; besides, more people will take an interest in making exhibits. This fact will apply to all the exhibits.

NEEDLE WORK DEPARTMENT.

In the needle work section the same improvements were made in regard to glass cases in which to install the exhibits and we now have a very good place to show our needle work and other fancy work and the space we have for same is large enough for present needs. A few years ago the board limited the exhibits to new work. This rule of course has a tendency to decrease the exhibits at first, but now the exhibits have been exhibit is much finer than it formerly was. The only thing that would increase the exhibits in this department would be the raising of the premiums, which is a matter for the management to determine.

In view of the fact that we now have a school exhibit, I believe the children's department should be eliminated and all their exhibits and all premiums for children should be awarded in the school children's department. The fact that such a department was a part of the fair last year decreased our children's department exhibits greatly. Of course this matter of the children's exhibits should have been mentioned in another paragraph, but what I say here will apply to the children's department generally.

PAINTING (ART) DEPARTMENT.

In the painting department, this being the department that has been under the direct supervision of Mrs. F. H. Schoenhut, will say, that this department does not come up to the standard that should be expected at the Iowa State Fair, and it seems that the only way it can be improved is by giving larger premiums in the professional classes. By doing this a much better class of exhibits can be obtained for exhibit, as it is a well known fact that exhibitors will not exhibit for the benefit of the fair, wholly; what they want is to know that if they take premiums, same will be large enough to justify them in taking the risk of placing them on exhibition. Personally, I think there ought to be a 50 per cent raise in premiums offered in the professional classes in this department.

It does seem that we should have a much finer exhibit in this department. I will say, however, that the exhibit is large enough, as it practically takes up all the space we have in the building. It is not a question of quantity, it is a question of quality; and in order to get the quality it will be necessary to give larger premiums.

GENERAL EXHIBITS, CONCESSIONS, ETC.

The space rented for general exhibits and for concessions deserves some mention. It is a serious question as to what should be charged exhibitors on merchandise and manufactured articles; however, I find that all persons, companies and corporations who make such exhibits do so because of the advertising they get out of it. I do not believe they do it for the good of the fair; however, most of them being Iowa people, they take an interest in the fair. They want to see a good fair and exposition, but they largely exhibit for their own good. As a matter of fact, they are a good thing for the fair and the fair is a good thing for them; it is a matter of mutual benefit and should be considered so by the management of the fair, and I believe this fact should be taken into consideration when space is let to exhibitors. However, it is also true that it takes money to run the fair and selling space is one of the ways to produce revenue, but I think good judgment should be used in the matter of selling space and the price of same should be determined more from the nature of the exhibit than from the amount of space used.

As to selling space to parties who sell their wares, such as are sold by people who are called "fakirs," etc., is a question worthy of attention Now, as a matter of fact, some of these people are good people and are doing a legitimate business, and again there are others who are not worthy to be allowed to do business on the state fair grounds. But it is a difficult matter to always determine who is who; it is a matter that requires experience, and it is impossible to tell until after the party begins business, and if any one has been sold a space that is found not to be desirable he should have his contract forfeited. All space sold to persons who are vendors of merchandise should be sold for a good price, as the space is worth a large rental to these people. I presume space to be sold for this purpose should be separate and apart from space sold to exhibitors. That is, they should be placed in a separate building; exhibitors and persons who follow fairs to vend wares should not occupy the same building, and when the time comes that there is a fire proof liberal arts building on the Iowa State Fair grounds I hope to see no fakirs allowed in said building.

PLACING EXHIBITS, ETC.

The question of placing exhibits in this department is one that should be considered, as generally everything is crowded in on the last entry day. However, if the fair should begin on, say Thursday, and the building be ready to open to the public on Saturday, then I think this trouble would be largely eliminated. It is difficult to get the exhibits ready to open on time when there is so short a time to receive and place exhibits, and the fact that there is so much to do in so short a time is one of the causes of loss of exhibits.

There is another matter, that of employing the help in the department. Every one who recommends any person for a position in this department should be sure that the person so recommended is a good worker. The fact is that no one is of any use unless they work with a will and take an interest in the work. Experience is a good thing, but remember that a good worker is far better help in this department than a person of experience who just wants to see the fair.

In conclusion will say that I hope as soon as possible the management will make some improvements in the Exposition building, such as putting in a concrete floor and painting the building on the inside, in case a new building cannot be erected soon.

T. C. Legoe,
Superintendent Exposition Building.

On motion of Mr. Legoe, revision of the premium list in his department was referred to himself and the secretary, with power to act, and that they be authorized, to increase the premiums to the amount of $50.00 if thought necessary. Motion prevailed.

Rules and regulations for the 1910 fair were adopted, the same to be as printed in the 1909 premium list except as to changes in dates and such other changes as were necessary to conform to the rule adopted by the American Association of Fairs and Expositions at their meeting in Chicago on December 2, 1909, and such other changes as may be provided in special rules.

Mr. Ledgerwood moved that the executive committee be authorized and instructed to confer with the attorney general and have drawn such a form of contract or lease as may be needed for the erection of private buildings upon the state fair grounds. Motion prevailed.

Mr. Olson moved that the program and other matters pertaining to the Speed department be left to the executive committee and the superintendent of that department. Motion prevailed.

The board authorized the adoption of the uniform rules and maximum classification for the live stock departments as adopted by the American Association of Fairs and Expositions as verbally reported by members present at said meeting, exact copy for same having not yet been received from the secretary of above association.

Mr. Pike moved that all unfinished business be referred to the executive committee with full power to act.

The committee on per diem and mileage reported as follows, which report was on motion adopted:

Mr. President:—Your committee on per diem and mileage beg to report as follows:

Name.	Days.	Rate.	Amount.	Miles.	Amount.	Total
C. E. Cameron	6	$4.00	$24.00	140	$14.00	$38.00
W. C. Brown	6	4.00	24.00	102	10.20	34.20
R. S. Johnson	6	4.00	24.00	158	15.80	39.80
C. W. Phillips	6	4.00	24.00	210	21.00	45.00
E. M. Reeves	6	4.00	24.00	123	12.30	36.30
E. J. Curtin	6	4.00	24.00	195	19.50	43.50
E. M. Wentworth	3	4.00	12.00	...	.....	12.00
T. C. Legoe	6	4.00	24.00	85	8.50	32.50
C. F. Curtiss	6	4.00	24.00	37	3.70	27.70
John Ledgerwood	6	4.00	24.00	64	6.40	30.40
M. McDonald	3	4.00	12.00	65	6.50	18.50
Chas. Escher, Jr	3	4.00	12.00	...	.....	12.00
O. A. Olson	6	4.00	24.00	155	15.50	39.50
H. L. Pike	6	4.00	24.00	200	20.00	44.00
						$453.40

Respectfully submitted,

R. S. Johnston,
H. L. Pike,
W. C. Brown,
Committee.

Mr. Olson moved that the board do now adjourn, which motion prevailed.

Scene in Camp Grounds, 1909 Fair

PART VII.

PROCEEDINGS

OF THE

Annual Meetings of the Swine Breeder's Association.

1909

BY C. C. CARLIN, SECRETARY.

OFFICERS.

L. H. ROBERTS, PRESIDENT	*Paton*
H. F. HOFFMAN, VICE-PRESIDENT	*Washta*
HARVEY JOHNSON, VICE-PRESIDENT	*Logan*
C. C. CARLIN, SECRETARY AND TREASURER	*Des Moines*

The summer meeting of the Iowa Swine Breeders' Association for 1909 took place at Des Moines, Tuesday, June 15. The peculiar conditions of the season operated to reduce the numbers of the members in attendance to an unusual degree. Owing to the sickness and absence of President L. H. Roberts, the duties of the chairman were performed by Vice-President H. F. Hoffman, who opened the afternoon session with the following:

PRESIDENT'S ADDRESS.

Gentlemen of the Iowa Swine Breeders Association:

In opening this meeting I want to say I am pleased to see as many in attendance as there are and wish the number was greater. I am particularly pleased with the program our enterprising secretary has mapped out for our entertainment this afternoon and evening. There are many things to rejoice over and like most enterprises of this nature, there are also some to regret, one of these is the inability of the president, Mr. Roberts, to be in attendance and deliver his address.

Not long since I received a letter from him saying that on account of ill health it would be out of the question for him to be with us at this time and requested me to be here and preside and prepare and deliver what he termed the "address of welcome." I fully intended to be here, but had expected it would be simply as a spectator and while I felt I might possibly preside, I hardly felt equal to the occasion of saying or writing anything that would do justice to the occasion.

There are a few thoughts, however, in connection with the Iowa swine Breeders Association that it seems to me are worthy of our serious consideration. I doubt if many or in fact any of us fully realize the important part this old association has played primarily in placing the swine industry where we find it today, and incidentally in giving the State of Iowa the proud rating she now enjoys, and I am firm in the belief that while we have other swine associations and good ones this is really the "master wheel" and has been a potent factor in the development of our state intellectually, socially and morally.

We have our breed organizations which are created solely to further the interests of a particular breed this is proper and right, we also have our great state fair of which every Iowan should feel justly proud, more especially the swine men, for as a swine exhibit its counterpart does not exist on the face of the earth, here we find this greatest array of swine and swine men each breed allotted so much space and penned off by themselves and when the fair is over the breeders of a certain breed have seen scarcely nothing of the exhibitors of the other breeds and still less of his hogs, this could not very well be otherwise as each has to work for and look out for his own interest.

But how is it when we come to the Iowa Swine Breeders meeting, or as it is called for short, the June meeting, here all are breeders but not "breeders of breeds" all feel at home and that we are really brothers thus bringing forcibly to mind the sublime beauty of that passage of scripture which reads: "Behold how good and how pleasant it is for brethren to dwell together in unity," we all come to learn and enjoy a mutual exchange of ideas, in years gone by it not infrequently happened that the breed prejudice would crop out either in a paper or the discussion by the claim of superiority of some particular breed, but I am pleased to say this is practically cut out, and I hope eliminated for all time, while we have been taught that certain nitrogenous foods would produce bone-muscle and vigor in a Poland China we have also learned it would do exactly the same in any other of the improved breeds and on the other hand those foods that would cause deterioration in these points in one would make no exception of the others, and we have thus learned that what is beneficial to one is so to all, this was quite forcibly set forth by our agricultural college at Ames several years ago at the conclusion of a breed experiment who put it thus: "The results are such that while we may all rejoice none can exult."

Federal inspections at the abattoirs of the country show that approximately 2 per cent of the hogs slaughtered in them are affected with tuberculosis, and of this number not far from 10 per cent were so badly diseased that they no longer possessed any value save their worth for grease and fertilizer.

We now come together as one large family, all with the same object in view, viz.: To advance the swine industry. The program is gotten up on purely nonsectarian lines. A paper is assigned some individual not because he is the promoter of some particular breed of hogs, but for the reason that he has demonstrated at least some ability along certain lines and through his paper we all get his ideas, which in turn brings out a discussion that is still more valuable than the paper, for here we get a collection of ideas which become the common property of all.

Such topics are discussed as the different foods, grains and grasses, sanitary conditions, selection, mating, care and a thousand and one things that go to make up the list of details connected with the business, every one has ideas on some subject that will interest some one else, the man with hayseed in his hair has ideas the college professor probably has more, but he has no monopoly, and so by each contributing his mite we all go home a little wiser than we came.

While this association has unostentatiously pursued the even tenor of its way and unconsciously perhaps become so great a power for good I think it is largely accounted for by the fact that they early came to realize the meaning of the old phrase, "United we stand and divided we fall," a lesson all must learn in order to advance. Even our religious teachers have come to see that valuable time has been fooled away by expending their energies in closed missions and close communion conferences, and that if they expect to get next to the world they must come out in the "free for all," and extend the right hand of fellowship to the other fellow and get his ideas, and after getting them accord them the same respect they exact for their own. This was strikingly exemplified a few years ago at the world's congress of religions held in Chicago, where Jew and gentile, Christian and pagan dropped, for a time at least, their creeds and isms and met on a common level and prayed on a common ground for at that time a precedent was established that has done more for the cause of religion and humanity than any thing that had happened along that line for the last one hundred years.

In conclusion I will say I hope the same free unfettered spirit that has prevailed in this association in the past will be the battle cry of the future and if I were to offer any suggestions for future guidance I would say, while I do not claim there may not be weak spots, but the record is good and anything that smacks of a radical change would be more likely to weaken than strengthen, so keep on in the same unassuming path and as faith, hope and charity are the three cardinal virtues I would name as seconds what are being disseminated at these June meetings, intellectuality, sociability and morality. A long life to the old Iowa Swine Breeders Association.

The program was opened with a most interesting paper prepared by Dr. John R. Mohler, Chief of Pathological Division, Bureau of Animal Industry, Washington, D. C., and Dr. Washburn, of the department. Dr. Washburn was present and delivered the address on the subject:

SWINE TUBERCULOSIS AND HOW TO GET RID OF IT.

BY JOHN R. MOHLER AND HENRY J. WASHBURN.

U. S. Bureau of Animal Industry.

In coming to Iowa to speak on matters pertaining to the hog industry, it is certain that I shall address an audience composed of people who feel an active, practical interest in the subject under consideration, for our national agricultural statistics show that Iowa owns in round numbers 8,413,000 of these animals, or considerably more than one-seventh of the entire hog property of the United States.

The money value of this immense number of pork producing animals is given in the same report as $54,684,000. You will understand that this valuation is one that was placed upon the animals by their owners without any reference to the conditions that might be exposed a little later in the packing house, when careful observation would no doubt prove that the presence of tuberculosis in many of these animals had greatly reduced their actual worth.

It is quite possible that many of the farmers who have sold tuberculous hogs in your state have done so without suspecting that they were unsound, for few of these diseased hogs ever manifest the presence of tuberculosis by outward symptoms when they left the farm. In fact, the hogs that disclose the affection at the time of slaughter are frequently the finest appearing animals in the drove when they are brought to the abattoir. Should indications of tuberculosis be present they will usually consist of those marks of general unthriftiness that are also present in many other diseases, and therefore do not afford any very definite indication of the presence of tuberculosis.

In the majority of cases no intimation of the presence of the disease will be given until the animal is slaughtered, and the discovery of a number of tuberculous hogs in a drove of apparently prime, well-finished animals is often the cause of great surprise and disappointment to their owner, yet the lesions may be so extensive as to render the meat unfit for food purposes.

Knowing that thousands of hogs contract tuberculosis every year, the question which becomes of paramount interest to us is, how do these animals gain the germs which cause the development of the disease?

We may arrange the causes under four headings:

1. Returned products from creameries.
2. Raw milk or hand separated milk from tuberculous cows.
3. Feeding behind tuberculous cattle.
4. Feeding tuberculous carcasses.

Considering these causes a little more carefully, we will find in regard to the first that while many creameries receive milk that is free from tubercle bacilli, there are others unfortunately, which receive milk every day from one or more cows so affected with tuberculosis that they excrete tubercle bacilli, and these virulent germs find their way in large numbers into the cans of separated milk which are returned to the farmers from these creameries. In this way a single advanced case of tuberculosis in a dairy herd may serve to contaminate a number of farms that were previously free from disease, and to spread tuberculosis among the hogs and calves of the vicinity. This particular means of spreading tuberculosis could be absolutely prevented if all creameries could be induced to sterilize their separated milk before returning it to the producers.

The second cause to which we have referred is closely related to the first, but may be more easily controlled. It is a cause which usually affects but a single farm at a time, and does not damage any of the neighboring stock, as it simply consists of feeding to the young stock on any farm the raw whole milk from one or more tuberculous cows that may chance to be members of the dairy herd upon that particular dairy farm.

The serious results of feeding milk from tuberculous cows will be appreciated when you learn that 83 per cent of a test lot of hogs that were fed on tuberculous milk for three days only, contracted tuberculosis from this brief contact with contaminated material. Other hogs that were fed for 30 days upon tuberculous milk contracted tuberculosis without exception.

The third cause of tuberculosis in hogs, feeding behind tuberculous cattle, is far more important than is generally conceded. The discovery was only recently made that many of the cattle that are affected with tuberculosis, yet without showing any outward signs of the disease, have their diseased areas so located that any discharge of tubercle bacilli must pass into the alimentary tract, and they are thence evacuated with the feces. It is impossible for a lot of hogs to run with a herd of cows of this description without coming into dangerous contact with infectious material from their feces.

Feeding upon tuberculous carcasses is a fourth important source for the development of tuberculosis among hogs. Occasionally a farmer's cow will waste away and die, and the owner in an endeavor to save as much of her value as possible, removes the hide and allows his hogs to devour the remainder of the carcass. In case the loss of the cow was due to tuberculosis, no more certain method of conveying this disease to these hogs could be found.

The fact has been well established that hogs may contract tuberculosis through eating the sputum of consumptives, and that whenever this occurs, the form which the disease assumes is fully as severe as though it had been derived from some bovine source. Proper precautions in selecting caretakers for farm animals will prevent infections from this source.

Tuberculosis may be transmitted from hog to hog, especially from a tuberculous brood sow to her pigs, but this manner of infection is so very infrequent compared with the number of cases of bovine origin that we do not need at this time to give it any very lengthy consideration.

The Bureau of Animal Industry has recently been investigating a case in which a large proportion of the hogs shipped from a certain ranch were found to be tuberculous when examined at the packing house, while at the same time it was learned that practically the whole poultry population of the farm had the disease to a serious degree.

It was learned that it had been the custom at this place to throw all the dead hens over into the hog yard where they were greedily eaten. Obtaining a .pair of tubrculous hens from this affected farm, and a pair of healthy pigs two or three months of age, the former were fed to the latter with the result that both pigs become tuberculous, which made it very evident that the hogs upon the ranch first mentioned derived their tubercular infection from consuming the tuberculous fowls. The frequent association of pigs and fowls makes it desirable to eradicate the disease from among the fowls should it exist before attempting to clean up the hog quarters.

The small amount of money required to start in the hog raising business and the quick returns on the amount invested makes this an attractive field for the farmer of limited means. Hogs will make greater gains on less feed than almost any other live stock and at the same time utilize profitably waste food products of every variety if properly prepared. As tuberculosis is chiefly acquired by ingestion the significance of the latter feature is obvious.

Hogs from Arkansas, Oklahoma and Texas are remarkably free from tuberculosis due to the methods of caring for them, or rather the lack of care. They are not restricted to feed lots, where disease is commonly found, but roam over large areas to shift for themselves. No prolonged feeding in narrow limits is practised, but from birth to maturity they are pastured on alfalfa, oats, corn, cow peas, sorghum, rape and peanuts. Hogs raised in the forest regions of Hungary are likewise rarely afflicted with tuberculosis. In striking contrast are the hogs slaughtered from three cities in one of the leading dairy states where there are a large number of co-operative creameries and where the raw skimmed milk is fed. Samples of separator sediment from two of these creameries were injected into guinea pigs and in one instance virulent tubercle bacilli were recovered.

Buyers from packing houses are learning from bitter experience to avoid sections of certain states, and there are at least two firms who will not buy hogs from one state which is known to be badly infected. In fact many of the smaller packers in the central west buy subject to post-mortem inspection as a measure of self-protection.

Sooner or later the packers will buy subject to post-mortem examination as some are now doing. Then the hog raiser who persists in fattening with tuberculous material will be made to feel the cost of his lack of knowledge or indifference. Today the buyer makes his purchases with the knowledge that a certain proportion of his animals will be condemned, and as the post-mortem is the only correct and reliable key, the careful breeder must suffer equally with the careless one. This is not equitable. But when the packer buys subject to post-mortem results, the painstaking and intelligent raiser will receive more for his healthy hogs than he does now, and the ignorant or indifferent breeder will get less for his tuberculous animals, which will be more nearly a fair deal for all concerned.

REMEDIAL MEASURES.

It may appear at first glance that the suppression of hog tuberculosis is an absolutely hopeless undertaking, the more so when we realize that no section of our country is free from it, but that inspection reports to the Department of Agriculture show that it is encountered at least to some extent in all of the packing houses having federal inspection. But there are many encouraging features to the problem which we shall not overlook. Present reports from inspectors show that in several localities there has been a material decrease in the number of tuberculous hogs sent to market. One state in particular has shown most encouraging improvement. The disease has been studied until its manner of spread, and the proper means of eradicating it are much better understood than they were formerly.

An investigation confined to the middle west and carried on by the Bureau of Animal Industry, consisted of tagging hogs hauled to market in wagons. Of 3,420 animals tagged it was learned that all of the affected stock came from a few farms—less than 6 per cent. This lends encouragement to the incentive to stamp out the disease by concerted action.

Since hogs almost invariably contract tuberculosis through eating infectious material, it is evident that the most effective means of preventing and eradicating the disease must consist of feeding only such substances as are known to be pure and free from all tuberculosis taint. This means that we must avoid feeding the milk that has been returned from a public creamery after the butter fats have been removed, unless we are assured that it contains no living tubercle bacilli; it also means that hogs must not be permitted to follow a drove of cattle unless the cattle have been proven to be free from tuberculosis. It may be stated here that the danger of tuberculous infection to hogs from following a bunch of fattening steers is comparatively very slight, but whenever there are a number of milking cows included in the drove, the dangers are greatly increased, and all such cows should be carefully tested with tuberculin that the infected animals may be removed from the herd, taking their infectious material with them. If it should so happen that one of the cows in the dairy has appeared unthrifty for sometime, and has at last died, do not feed her carcass to the hogs with a view to saving as much as possible out of a misfortune. Just consider for a moment that if that cow has died from tuberculosis she has within her body enough tubercle bacilli to infect fifty hogs, and the loss from fifty tuberculous hogs would more than devour the amount saved by feeding the carcass of the cow.

In dealing with affected herds of cattle it has been found best in most cases to apply the tuberculin test to the entire herd as a means of selecting the tuberculous animals, but with a drove of hogs in which tuberculosis has appeared there can be no doubt that the best and surest method of procedure will in nearly every case be found in the slaughter of the entire drove as soon as they can be put in a marketable condition. They should be slaughtered at an abattoir under federal inspection, so that proper disposal may be made of affected carcasses.

This means of removing from the farm all of the centers of infection which exist among its swine is made possible and practicable by the ease with which a new drove may be built up from fresh foundation stock. With cattle the offspring seldom number more than one to a cow in a year, and the young cow does not produce until two years of age. With swine reproduction may be expected when the young sow is one year old, and instead of producing but one at a birth from six to ten may reasonably be expected. If properly handled, the first litter of young may be weaned in time to allow the sow to farrow again the same year. This shows how very rapidly a farm may be stocked with healthy swine after the total slaughter of a tuberculous lot. The early age at which the sow may be bred, her capacity for breeding twice a year, and the plural number of her offspring are forceful arguments for the total destruction of every diseased drove of hogs and the breeding up in clean, healthy quarters of a sound, healthy drove in its stead.

DISINFECTION.

Having removed all tuberculous cattle, hogs and fowls from the farm, attention should next be given to disinfecting the premises so that no center of infection may remain to contaminate future purchases of live stock. This is in reality a serious job and should be entered into with full determination to do thorough work. The disinfection of pens and stables may be accomplished by thoroughly cleaning them, scrubbing the floors with hot water, brushing down all loose dust from the walls, and tearing out all woodwork which has became partly decayed. The interior of the pens or stables should then be carefully covered with a coating of lime wash containing one part of formalin to 30 parts of lime wash, or four ounces of formalin to each gallon of the lime preparation. The yards should be carefully cleaned at the same time, especial attention being given to the removal of all rubbish and litter from the dark, shady corners. Lime, or a 3 per cent solution of carbolic acid, may then be sprinkled upon these dark portions of the yards. In all of the open portions of the yard the action of the direct rays of the sun will very quickly destroy all the virulence of the scattered tubercle bacilli.

The premises now being cleansed, healthy foundation stock may be procured, and if proper attention is given to keeping the cattle of the farm free from tuberculosis and to supplying the hogs with suitable food, the owner may feel every reasonable assurance that he has seen the last of tuberculosis among his swine. The trouble, time and expense required will be more than repaid by the advantages gained.

It has been quite conclusively shown that swine acquire their infective tuberculous material from cattle, mankind, or poultry, but principally cattle.

Tuberculosis cannot develop spontaneously in swine, but must be acquired from some outside source, and the farmer whose yards and stables have been thoroughly freed from the disease need fear no reappearance of the disease, except when introduced from some outside point of infection.

Great assistance will be afforded in keeping tuberculosis away from a farm by the use of concrete in the construction of stables. Its advantages over wood, which may decay so soon, in the construction of floors and walls, can hardly be appreciated except by those who have tried it. Its use affords one added means for combatting tuberculosis and freeing our stock from its damaging effects.

Your great state, occupied by a vast number of progressive farmers who have developed such wonderful agricultural wealth, has before it an even greater development in the future in its many lines of farming. The industry which we are considering, great as you have made it, is still capable of further expansion and betterment. Our highly esteemed secretary of Agriculture will lead us on in co-operation with the farmers of Iowa until tuberculosis, this great drawback to her live stock interests, has been suppressed and Iowa stands out more prominently than ever in the lead as a producer of the choicest live stock that the world has ever known.

The subject proved to be a popular one. It brought out an extended discussion from those present, and a very close questioning of Dr. Washburn on the statements presented. In the main, however, no new facts were elicited, but the answers served to make plain some of the more obscure ideas.

Following this Mr. H. S. Allen, of Russell, Iowa, presented the following able treatment of the subject:

THE BREEDER'S DUTY IN PRODUCING A FIXED TYPE.

BY MR. H. S. ALLEN, RUSSELL, IOWA.

Fixed type is one of the first essentials in the production of any kind of live stock. Without it no real progress is made. The breeder who endeavors to build up any of the various breeds of swine must first have his ideal in mind and then must breed for that type. If his type is right, and he is firm in his belief that it is, and sticks to it, sooner or later the world will recognize the work that he is doing and success will eventually crown his efforts.

Every breeder should consider it his duty to produce the type which will advance the breed in which he is interested, and there should be a fixed type in each breed which every breeder should seek to attain. The great advancement made in the past twenty-five years has largely been due to men who have had well defined ideas on what constituted the perfect animal. Some may and possibly will differ on what this perfect animal is, but the ideal is never lost sight of, and with this object in view advancement must surely come to every breeder who seeks to build up his particular breed.

Looking back over the history of my own particular breed I can fully understand the value of fixed type. Today the Duroc Jersey has become one of the recognized breeds of this country largely through the efforts of those pioneer breeders who had certain ideals of what constituted a perfect hog. From a slab-sided, long-bodied, coarse hog we have endeavored to and have produced one of the smoothest, most practical and profitable breeds of swine today in this country. This would never have been accomplished had not fixed type been uppermost in the mind of those who were interested in our breed of swine.

The Poland China of twenty years ago or more was a large and very coarse type of hog. Fixed type has here again demonstrated the possibilities of this great breed of swine, and today we see the big, medium, smooth, nice-headed Poland in every leading market of this country. No breed of swine has made greater advancement than has the Poland China, and while I am not breeding that particular strain of hogs, I nevertheless fully realize what fixed type has done for that breed.

The breeder of fixed type may not necessarily be popular in his day, yet if his ideals are right it will only be a question of time until his efforts will be rewarded. The greatest breeders of the past fifty years were men who endeavored to do things. In other words, they sought to improve upon the breed in which they were interested and ultimately the result of their work was manifest in every leading market center of this country.

This great work could never have been accomplished had not these men had a fixed type in their mind's eye, and the result of their work brought millions to the producers of this class of live stock. If you will permit me to digress for a few minutes I will call your attention to the great work of Amos Cruickshank, one of the foremost breeders of Shorthorn cattle in his day and age. History tells us that Bates cattle were the popular cattle in his time. The Bates type of Shorthorn were of the large, leggy kind that took considerable time to mature. Amos Cruickshank believed that a shorter-legged, more beefy type was more desirable and sought to produce that kind. In his earlier life the rank and file were against him. In fact, those who believed in the "fads and fancies" were not with him in his endeavor to better his favorite breed. Had he not been a man of great character, of rugged constitution, and of determination, he would never have accomplished what he did in this breed of cattle. He had that fixed type in mind and he never wavered from his ideal. It was nearing the closing of his life work that the name of Amos Cruickshank became revered by every breeder of Shorthorn cattle. The work that he accomplished lived after him, and today no strain of Shorthorn cattle is more sought after than the Cruickshank. Had this man not had his ideals or, in other words, had he not that fixed type in mind, the great cattle world would have been the loser. As it was, he did a work that lived after him and will go on for centuries to come.

The great advancement of every breed of swine has been due mainly to fixed type. Breeders should stick to it and endeavor to produce the hog that will return the most pounds for the amount of food consumed. I have had my own idea of what fixed type really is and have always sought to produce the ideal. I have sometimes fallen short in my calculations, but this has never deterred me from going on with this great work. The breeder who produces this fixed type must think for himself and he must learn by experience how animals must be mated. No great results will ever be accomplished if forethought and good judgment are not brought into play. Study the characteristics of your animals and make up your mind on the results before you ever breed. The breeder who does this will sooner or later be the gainer thereby. In producing the ideal breeders will soon find that there is a good demand for their stock, and financial reward will sooner or later come to every breeder who does this.

Fixed type is the first essential in the production of any and every breed of swine. The breeder who has not the fixed type in mind will never accomplish any great work in the production of his favorite breed. In other words, the breeder who favors the larger and coarser strains should not deviate from his ideal. He should not use a breeding animal of another type and follow that with still another type of animal, only to find out later that he has no fixed type in his herd. Uniformity is one of the first essentials in breeding up a herd. One man may favor the larger strains, another the big medium, and another the smaller and more showy type, but whatever his idea is he should bend his every energy in that direction. The breeder who goes from one extreme to another can never hope to have that fixed type in his herd, and it is a question in my mind whether he will ever make any great success as a breeder.

Mr. Allen was freely called upon to defend the expressions of his paper, and did so so successfully as to show the strength of the positions taken.

Mr. B. R. Vale, of Bonaparte, Iowa, who had been assigned a place on the program, was unable to attend, but forwarded to the secretary, who read it, his paper on the subject.

THE KICKER IN THE HOG BUSINESS.

BY B. R. VALE.

Primarily speaking the kicker is born such rather than made. This element is one of heredity and may be cultivated or modified by environment.

We notice some of the things that enhance this condition in the ranks of breeders generally and in the swine business in particular. The field of stock-broker breeders, bankers and professional men, following their vocations in person and having a country seat managed by proxy and used as headquarters for raising a few swine and for congregating as many more from other breeders as a number of well displayed ads in agricultural papers will justify, is one of the fertile sources for cultivating the pessimistic germ of kicker in the hog business.

Lack of personal attention to, and expert knowledge of every detail on the part of the attendant is the secret of the disadvantages of this method. The novice in swine husbandry is another source of discouragement and distrust to the innocent mail-order purchaser of breeding stock. All must have a beginning, must obtain a schooling and become expert in chosen vocations, but this should not be at the expense of souring our early patrons and engendering the microbe, "the kicker."

Lack of experience and knowledge of the business rather than any intentional wrong-doing is the source of complaint in this case. The other extreme is perhaps equally pernicious. A breeder having enjoyed a merittorious reputation for years endeavors to retire on his laurels or to transmit his trade to "C. D. & Co."—"successor to the noted breeder A. B."

C. D. & Co. forget that "out of sight is out of mind" and neglecting to advertise systematically and keep in touch with swine exhibits, exhibitors and breeders generally, soon find the current of trade diverted from the fountain-head of their once distinguished herd and gone—they know not where.

By keeping up with the procession—keeping in touch with improved methods and always doing justice by the patron, this last condition need not prevail.

But the kicker, pure and simple, is found in all the ranks of the swine growing industry—from the farmer, who only grows swine for the market, up to the professional breeder, we find many who are seeking something for nothing or cultivating their pessimism at every opportunity. To overcome this tendency requires eternal vigilance and superior skill on the part of breeders and shippers.

The difficulty of putting on paper in language sufficiently explicit to be fully and rightly understood by the other fellow and conveying correctly the ideas contained in the intellectual vision of the intelligent purchaser, is one of the vexatious problems we confront. In evidence of this how often do we have a detailed description of what is wanted and if by chance the intending purchaser arrives on the scene to select in person we find him selecting a type of animal differing materially from that of the description. The intelligence conveyed through the eye seems to be more accurate than that transmitted by language, or possibly we lack the ability to express in words the perfect type so vividly stamped in our occular vision.

Words are sometimes meaningless, tautological, redundant, ambiguous and almost absurd. The kicker is like the poor, "Ye will always have him with you." We cannot eliminate him; we would not if we could. He is a blessing in disguise. He serves a purpose. Possibly we all reap somewhat from his pernicous sowing. He does with impunity that which nobler manhood would not deign to do. "God made him, let him pass for a man."—(Shakespeare.)

DEVELOPMENT OF THE SWINE INDUSTRY OF IOWA.

MR. W. M. LAMBING, OF CEDAR RAPIDS, IOWA.

Mr. President and Members of the Iowa Swine Breeders' Association:

Some weeks ago your worthy secretary informed me in writing that he had scheduled me on his program for this meeting. He said my topic would be "The Swine Development in Iowa." However, the program reads, "Development of the Swine Industry of Iowa." Certainly this a very large subject and one that I do not feel competent to handle in a very thorough manner. While I have had a life experience in the breeding of swine and nearly twenty-three years observation as a newspaper representative among swine breeders of America, I have only recently learned or realized how little I did know on this very important topic.

Your secretary has not informed me as to whether he meant the development of the pure bred swine industry, or of the general swine industry, both pure bred and grades for feeding purposes. Inasmuch as I am not confined to either branch, I shall be inclined to mention both branches in these rambling remarks.

I have not the data at hand giving information as to the variety of the breed or when the first swine were introduced into the Hawkeye state; although I came to Iowa myself fifty-three years ago, I am still in the dark on this subject. As long ago as the date mentioned, the swine industry of Iowa was being developed to some extent with mixed breeding of the breeds then extant, which were very many, and, like Jacob's coat—of many colors. As Iowa was peopled early by many Ohio settlers, it was very natural to presume that more or less of the then so-called Miami Valley breed of hogs wended their way to the Hawkeye state. This breed was so called because it had its origin in the Miami Valley of Ohio. This breed was formed by a co-mingling of the various distinct breeds then in this country. The Miami Valley farmers realized that none of the distinct breeds quite met the requiremnts of their day, and sought to establish a breed distinctly American that would give them a larger return for the corn fed, a hog that was more docile and of a lymphatic temperament, not possessed by any of the then prevalent breeds. So the constructive breeder of that early day used the following breeds in the composition of the Miami Valley hog, which afterward became world-famed as the corn belt hog. The breeds referred to were the Berkshire, Irish Grazier, Poland, Byfield and the Big Spotted China. From these crosses it naturally followed that a great variety of types and colors was the result. But by judicious selection from the best representatives of these crosses, and through intelligent matings, a distinct type was finally produced back as early as 1835. Just when the advent of this improved blood first made its appearance in Iowa, I can give no information, but the development of the swine industry, and particularly its improvement, must of necessity date back to representatives of this new breed, and began soon after corn became one of the prime factors in Iowa agriculture in the development of this new state. That the Miami Valley hog, afterward called the Poland China, played a very prominent part in the early development of the swine industry of Iowa, is unquestioned, and that they had assumed proportions that made them a great favorite in the Hawkeye state before I came on the scene of action is a well known fact. Yet, I became identified with the swine industry in 1867, and have been in close touch with its development and evolution from that day to this. When I first identified myself with swine breeding, the preponderance of the hogs in my community were of a great variety of color—all were very spotted, some with very large white spots, some with very red and distinct sandy spots, and still others that might aptly and appropriately be called white with black spots. In about 1877 numerous Iowa swine growers encouraged by some growers in Illinois, Wisconsin, Indiana and Kansas, started an agitation called the Purity of Breed. It was the design of these far-seeing and enterprising pioneers to keep in its purity the corn belt or Miami Valley hog and prevent the introduction of foreign bloods through the hands of injudicious and inexperienced breeders, which might have a disastrous effect on the breed.

The aim was to keep a record of the breed and establish a standard of purity. After considerable letter writing and exchange of thoughts by these pioneers, this was finally consummated at a called meeting in Cedar Rapids, Ia., Jan. 23, 1878. After a great deal of preamble and much discussion pro and con, it was decided to form an association, establish a herd book and issue the first volume of a pure bred record. The name of this record was known at that time, and is today, as The American Poland China Record. The first volume was printed in Cedar Rapids, Iowa, 1879, and it is today beyond question the greatest association for the purpose of registering pure bred swine, of any of the breeds or any of its rivals. The first animal recorded in volume I has a very short history, his sire, dam and sire of dam is all that is given and all that is known of his breeding, and no numbers are furnished for any of them, inasmuch as this was foundation stock. At the foundation of this record it is fair to assume that the preponderance of the hogs of Iowa contained a very large per cent of this blood, as had been bred by the Iowa farmers for years past. It was the prevailing custom at this time among the farmers, and for years before, to breed their spring gilts the following December or January, wean the pigs early in the summer, feed the sows off in the fall or early winter, and keep gilts again next year. This custom was pursued for very many years, and quite successfully so during that period when the breed was comparatively new, and while much of the strong composition blood, full of variety and vigor, was present. Thus far it had not been weakened by too much in-breeding, as was the case in latter years, and is still. At the time of the foundation of the record, foolish fads, fashions and isms, both family and otherwise, had not entered in, and were not cutting any prominent part with the breed at this time. As yet the breed was in safe hands, the hands of conservative breeders, whose good common sense had yet to be contaminated with fads, fancies and crazes, which afterward brought disaster on the corn belt hog. The hogs of thirty years ago were very mellow, easy feeders, could be fattened at any age, yet if carried to 18 to 24 months of age, grew into very large, shapely profitable hogs. I speak in this instance from personal experience, for in 1880 I bred, personally fed and marketed a bunch of May pigs, sold them the following January at an average age of 8½ months old; their average weight was 317⅝ lbs. The next year I fed and sold just double this number at 9 months of age, and they weighed 315⅞ lbs. I sold the sire of these pigs as a stag at two years old, weighing 960 lbs. This stag had considerable white on him, but was one of the mellowest and easiest feeders that I ever owned. At this time the very best boar pigs could be bought from the breeders of registered swine at from $20 to $35 each. Occasionally a breeder would pay as high as $50 or $75 for a boar that was exceptionally good that he wished to place at the head of his herd. Along late in the 80's the speculative element developed in the swin industry of Iowa. The idea developed in the mind of a trotting horse jockey, who became interested in the then called Poland China swine. He conceived the idea that the average breeder of swine was too slow and unsophisticated, and that he needed a little stirring up; he doubtless thought he saw an opportunity to play and work on the duplicity of the average swine breeder. This trotting horse jockey had his residence in an eastern state; he named his Poland China boar after a well known stallion, a king of the turf. This trotting horse man raised a fine crop of pigs by this great boar and conceived the idea of selling them at public auction. This was the first public auction of pure bred swine ever held in America of which we have any knowledge. "Plugging" as horse men term the word, was inaugurated at the birth of this system of selling. This eastern breeder communicated with a then prominent Iowa breeder with whom I was well acquainted, and offered to sell him prior to his first public sale the best boar pig in the offering for $50; but with the further understanding that the Iowa breeder was to attend this initial sale in the east and bid off this same $50 boar at whatever price he was compelled to. The letter further stated that the seller would pay all expenses of the Iowa breeder in attending the sale. The eastern breeder further stated by letter that the idea was to "catch suckers." The Iowa breeder became a party to this scheme and did attend the sale and did bid off the $50 boar at $270. Another Iowa breeder attending the same sale bid $265 on this same boar, but as I did not see his letter do not know but what he may have been the sucker. Another Iowa breeder purchased five head at this sale, privately, prior to the sale, at an average price of $40 each; but the reported price in the sale of these same five range from $95 to $150 each.

Now, behold what a great flame a little fire kindleth. The $150 and $270 prices were entirely too modest. The heat was on. The experiment had been made and fully demonstrated that the swine breeder was an easy mark. Soon the auction sale became the popular method of selling swine. Prices went skyward. New records for high prices were made at each succeeding sale until as much as one, two, three and five thousand dollars became common prices. When individuals could not be found green enough to buy at these prices, companies were formed to take stock in $5,000 boar and $2,000 sows. This condition existed until the bubble burst, and oh, what a fall! Many of the small breeders who had purchased or taken stock in some of these high priced hogs of noble birth were forced to sell their farms in order to pay their notes. In fact, before the bubble finally burst the kings and queens of the breed could not be produced fast enough, notwithstanding the great rapidity with which swine multiply. It became alleged that because of the scarcity of these $5,000 kings that one of them that was sold for some $5,000 had been dead for weeks prior to the selling at auction, and a substitute boar had been imposed instead. Lengthy litigation followed this transaction, the said to be dead hog was resurrected from the grave, and his bones and head introduced in court as evidence. The seller of the dead hog was rejected from the record, but has been healed and is now a prominent breeder of Berkshires.

Farmers read of these crooked and nefarious deals through the agricultural and live stock press, and very naturally concluded that all men engaged in breeding this breed were scoundrels. Hence they very naturally turned toward the red hog—the Chester White—for, as yet, these breeds were in the hands of conservative men. The boom had not struck these breeds at this time. The red hog in particular was at this time, in Iowa at least, in the hands of conservative and constructive breeders. Such as Chas. H. Holmes, Uncle William Roberts, N. P. Clark, Andy Failor and a few of the old guard, whose honor and integrity had not been and never was questioned. Farmers quit buying Poland Chinas to a great extent and went over very largely to the red camp, some buying the Whites, it is true, and all was well for several years. But the speculator, having seen his opportunity to duplicate the follies of some of the Poland China crowd, began to get in his work, until auction prices for red hogs have apparently also gone the limit. With fabulous prices naturally come fads. Certain family strains for some unknown cause assumed very valuable proportions, in fact a corner was sought to be established, and breeders went wild over certain families of the same breed until they were boomed and made very fashionable. Indeed, some of them became so fashionable that the various scrubs of the royal family brought ten times as much money at auction as a really meritorious animal would sell for that did not happen to belong to that particular aristocratic family. In fact it is not uncommon to see at some of these auction sales of the different breeds absolute nondescripts called "brood sows," bred to Buddy Somebody or Col. Nobody, or some other very prominent boar, sell at prices ranging from $150 to $300, when no experienced level headed breeder but what knows full well that such a sow could not produce a decent litter from any living boar that would be a credit to the breed.

Quite recently I was on an Iowa farm and inspected about 100 head of swine. I cannot consistently give them any other name. They were a mixture of Poland China, Duroc Jersey and Hampshire. I will say, however, that breeders of any of these three distinct breeds would have been shamed to have admitted that any of the blood of their favorite breed was here represented.

Only about six weeks ago I was on the farm of a well known Iowa cattle breeder, and there witnessed a sight I shall never forget—it was something like 125 head of, well, I will say, just hogs—produced by three crosses of Tamworth boars on Duroc Jersey sows to commence with. I innocently asked the man what he was trying to do and what he hoped to accomplish by this manner of breeding. His answer was that he thought they were more prolific bred in this manner. I could not refrain from saying to him that I thought that at the present rate of deterioration, that about one more cross of the present kind and he would produce a crop of snakes.

I speak of these two breeders, or farmers, to show that both had become discouraged with the sort of pure bred boars that they had been securing from the breeders. Of course in this sort of procedure they were making the fatal mistake of crossing the breeds until nondescripts was the result.

What all of the breeds need most to put them back in favor with the Iowa farmer (and he is the real backbone of the business) is for more men to engage in breeding a good, useful, practical hog, well suited to the farmer's needs, breed him free from fads and isms of all kinds, and less of the speculator and faddist. Not one breeder in every ten enaged in breeding pure bred swine in Iowa today has kept his herd up to as high a standard as the foundation stock with which he started. Many of them have fallen far below this standard. Iowa has many men breeding pure bred swine, but only a very few constructive breeders of improved swine. Only a few are able to improve the breed already in their possession. This is partially true because of the fact that only a few men now engaged in the business have been at it for any considerable length of time. In order to be a constructive breeder, an intelligent breeder, an improver of the breed, one must have spent the larger part of his life at the business, or, if a younger man, his father must have done that for him and handed down the experience and foundation stock of the father's brains to his son.

As it stands today, some young farmer who has been breeding grades concludes to attend a sale of pure bred swine; he buys a few brood sows, and if they are not already bred, buys a pure bred boar. The next year his announcement will be found in the live stock press of the country, as follows: "John A. Jones, breeder of pure bred swine (of some well known breed). The richest and bluest blood of the breed represented. Come to the fountain head and secure kings and queens of the breed. Come and see Old Dad, that has done more for this particular breed than any other boar living."

Now, fellow swine breeders, I think you catch my idea. What does this young man really know, and what could he know about breeding swine, from that high sense of breeding which would carry weight with any intelligent breeder of experience.

Swine breeding will always play an important part on the well regulated Iowa farm, and with the advent of $150 per acre land and 50 to 75 cents per bushel for corn, the swine industry will certainly decline unless the very best type of hogs are maintained and the most intelligent methods of feeding and care pursued. I fear that this paper is somewhat like a mother-hubbard dress. It covers a heap and touches but little.

HANDLING PRIVATE SALES.

B. F. Davidson, Menlo.

To my mind the question of handling private sales is a very important one. It is, in fact, the basis upon which must be founded the success of the swine breeder's business. I have no quarrel with those who make public sales, or those who may consider the public sale system the more important. But I am sure that without the confidence and respect that were first established by the private sale system there would be no successful public sales. A public sale is not possible where there has not first been built up a demand for the stock on the part of the public.

In selling stock at private sale there are two classes of buyers—the one who comes to the herd and makes a personal inspection of his purchase, and the one who is satisfied to order by mail and trusts to the seller to make a selection that will suit him. Each of these classes must be handled in a different manner.

The first class is perhaps the more difficult to manage, as making a sale involves not only some judgment of human character, but the exercise of diplomacy and business tact. A man who comes to inspect stock should be treated cordially and shown the ordinary business courtesy that is extended toward a customer of any commercial establishment. He has a right to receive all information concerning pedigree or individual characteristics that will enable him to make a good selection. It is well, too, to be able to advise him on the points of feeding, care and handling of the stock, as well as what matings are advisable and what are not. The breeder who understands the feeding qualities and habits of growth of his own stock may be of great service to the buyer in all these matters.

After quality the most important element in making a sale is price, and this should be based on actual merit. We are presuming that the breeder has, before the commencement of the selling season, culled out all inferior animals and separated them from those which are to be offered for sale for breeding purposes. Even when this has been done there will remain wide differences of merit, and an equitable scale of prices should be fixed on these. Of course those on which the highest figure will be placed will be the ones that have most promise of winning honors in the show ring. As a fact, any of us will be lucky if he has even one of this description. The lowest price will be that set on the animal to be used in the ordinary farm pork raising herd. And it is well not to let even these be of a too ordinary character. The better the animals we send out for any purpose the greater our chances of building up a patronage that will come back from year to year. No man should be permitted to buy an animal that has any fault or flaw without being fully advised of it. Once having set a range of prices it is not a good plan to deviate from them. In order to be able to do this we must ourselves have a perfect understanding of the values and be able to point out the differences without fail. Doing this gives the buyer confidence and also helps to spread a knowledge that is all too scarce.

While I believe in treating a prospective buyer well at all times, I also believe that I am in turn entitled to the same courtesy. There is no satisfaction in dealing with the man who, after taking up half a day of my time in looking over everything on the farm and talking of every conceivable thing on earth except what he came for, haggles over price, finds fault, cites herds where he can buy cheaper, and so on with the entire list that most of you could fill out yourselves. I want to give a man value received, and I want him to go away feeling that he has made a deal that is as good for him as for me. Under these circumstances I am justified in expecting him to return when he is again in need of stock. It is a good plan to keep an accurate record of sales so that the patron who comes year after year may be assured of new blood if he insists on that point.

The mail order buyer is not always easy to sell to because he is pretty sure to describe, in the list of requirements, a hog that would be a sweepstakes winner anywhere. So it is not a bad idea to give him a careful as well as truthful description of whatever you have that you think would answer his purposes. Any extravagant descriptions are apt to do more damage than good if a sale be made through them, as most any buyer is well enough acquainted with hog merits to know when he is beaten. And the man who pays more than a hog is worth never gets through kicking about it.

Any correspondent should be written to promptly, and such a letter as will lead him to remember the writer kindly. All questions should be answered. When the buyer indicates that he wants something of better than ordinary merit it is a good plan to urge him to come and see the herd and make his own selection. This for a two-fold purpose. If he does come and you have something good, he is almost sure to buy. If he does not come he is apt to have confidence that if you are willing to have him see the herd you must have all you say you have. Either way it is an advantage to you.

When I make a shipment by express I like to have it go in a nice new crate, that has my name and address stenciled in a prominent place so that anyone who sees it may know where it comes from. The buyer is also apt to feel better if he receives a hog in a good crate than if it comes in an old weather beaten one that is about to fall to pieces.

Guarantees have not a little to do with holding private trade. While I do not think it good business to make any guarantee beyond that the animal sold is sound so far as I know, I am willing to try to make good in a satisfactory way any differences that may arise between me and my customer. If the hog fails through any fault to accomplish the purpose for which it was bought, I am responsible and will make it right. If, however, the failure is due to mismanagement or improper care while in the hands of the buyer, then I am under no obligations. But the settlement of all differences must be based, aside from the actual justice involved, upon the extent to which the seller will go to hold the good will of the buyer. And in this there is a wide divergence in practice among breeders.

PUBLIC SALE FOLLIES.

R. J. HARDING, MACEDONIA, IOWA.

Gentlemen and Members of the Iowa State Swine Breeders' Association:

The question that has been assigned me, "The Public Sale Follies," is one that is so broad and comprehensive that I hardly feel equal to the subject. However, I have made some very careful observations during the past seven or eight years on some of the follies of our present public sale, system, and I will touch upon them, not, with the intention of hurting anybody's feelings, but with the hope that my remarks will assist in bringing about a much needed condition that will be for the best interests of all those who are breeding swine.

In earlier years the swine breeders of this country very largely disposed of their surplus stock privately, at that time the breeding fraternity was limited, and it was an easy matter to dispose of everything at remunerative prices. With the rapid increase of the breeding fraternity, new methods came into vogue, and the public sale system was accepted as one of the better methods of disposing of our surplus breeding stock.

With this system comes many follies that must eventually be remedied if the best interests of the breeding fraternity is subserved, I will attempt to touch upon some of these follies as I see them, with the hope that it will be for the best interests of all who are engaged in this great work.

One of the follies of the public sale system, is the stimulation of prices, above their real value. Not that any breeder would intentionally do an injustice to his brother breeder, but with the desire to help in his brothers sale, he has been lead to bid upon animals beyond their real value, and in such cases the purchaser is often the loser, and through this practice young men who seek to be breeders are led to purchase animals, whose quality does not justify the price paid. When these young men find that they have been mislead by this method, they become discouraged and those who might otherwise have been good breeders, in time, drop by the wayside. I am glad to say that this practice is not endorsed by the better class of breeders, but is sometimes done in public sales.

I believe that this method should be discouraged by every breeder that has the interest of his breed at heart. I am an admirer of a high class individual of any breed of swine, and am always glad to see the same appreciated by other breeders while that individual is in the sale ring.

But the method that is sometimes followed by some prominent breeders, of making a lengthy statement, dwelling upon the qualities of an individual in the sale ring, when in fact that individual is very ordinary, should be discouraged. This is frequently done in order to stimulate new beginners to purchase individuals that they themselves would not want. This practice is detrimental to the breeding business in general and must react to the detriment of the party making the sale.

Another folly that has come very prominently to the front in recent years is the desire to make a high average regardless of the merits of the stock being sold. High averages is all right when the quality of the stock justifies the price, but when a hog sells for $1,000 or $2,000 when in fact they would have been well sold at that many hundred, must inevitably react on every branch of the breeding business.

Almost all breeds of pure bred stock have at one time or another gone through these extreme conditions, and I believe that every true breeder should use his influence to discourage these practices, I believe that the time has come when every true breeder should seek to produce a high class offering, making this his prime object rather than making a high average. When these conditions exists, high averages will be the result of real merit and will come of their own accord, and will be a stimulus rather than a detriment.

Another folly that has come with the public sale system in recent years is, that if I purchase of you, you are under obligations to come and purchase of me, regardless of whether said breeder is in need of said stock, this I consider is a mistaken idea, no breeder should be expected to buy simply because some other breeder bought of him. Should this system be followed to its logical conclusion it would be better for all of us to put our surplus stock upon the market, but I do not feel that

I am under obligations to buy of him simply because he has bought of me.

The fundamental principal of this part of the breeding business is that we are selling our surplus stock, and if we are compelled to buy as much as we sell, it will be anything but profitable.

The public sale note system is a folly that almost every breeder is familiar with, and in my judgment overshadows all others. It is a system that must be changed if the perpetuation of the breeding interests is to be made profitable. This is a system in which two classes of individuals are concerned, both the seller and the buyer.

It does not appear fair to ask a breeder to accept a note from a party, when that party knows that his home bank would not cash the same without security.

It is a very easy matter for a man that is responsible to go to his home bank and get sufficient credit to make needed purchases for addition to his herd if he should not have the cash. There are none of us who would not be willing to grant time where the party desiring credit is responsible, and we know we could cash such paper at par. The bank references are sometimes unreliable, most any one can get a bank reference. Some banks will furnish references when they would not accept the parties note to whom they gave the reference without security, and this has worked a hardship on the breeding fraternity.

Like the American Indian, the public sale note must be relegated to the rear, and the sooner the breeder comes to a cash basis, the better for all concerned. This has been very forcibly brought to my attention by several instances that have occurred to my knowledge. In one case $390.00 was bid and would of been paid for in cash, this party wanted this particular sow, but let her go to another at $400.00 and he in turn gave his personal note for same, and failed to pay same. Here is a case where the seller and intended purchaser was both done an injustice. I am giving this instance to show where the seller and prospective purchaser suffered an injustice in consequence of the sale note folly. The prospective purchaser in cases of this kind is compelled to compete with parties giving notes whose commercial value is sometimes worthless, hence if they buy they must overbid this class of bidders, and it is my personal observation that this class of buyers will force cash buyers to pay more than an animal is worth if they really get what they want. I therefore feel that it is the duty of every breeder who has the interest of the breeding business at heart, to use his every influence to encourage the establishing of the cash system, this would very largely overcome one of the greatest evils of the sale system, it would put the breeding business on a healthier foundation and will ultimately be for the best interests of everyone who is engaged in the production of pure bred stock.

In conclusion let me say, brother breeders, my statements in regard to the public sale follies, has been the outcome of my observations in the breeding business during the past seven or eight years, and I trust these few remarks will be the means of setting breeders to thinking about our public sale follies, and that the breeder will unite to protect the sellers from irresponsible buyers at our public sales, I believe that all public sales should be conducted upon a strictly cash basis, then the breeding business will be on a better and more substantial foundation. I am yours for better methods.

In the general talk which followed there was a healthy airing of the undesirable practices that have grown into the manner of conduct of public sales.

MY IDEA OF A PORK HOG.

CHARLES J. FAWCETT, SPRINGDALE, IOWA.

It would appear after all these years of intelligent care and breeding, even yet there is some difference in opinion as to the proper type of a pork hog. He has been raised from the plane of the veriest savage, unsought except when hunted like any other wild beast, to that of a benefactor contributing a wide variety of meats, among them the most toothsome known to the epicure, and other products essential to the best tables, to commerce and the trades. The hog's disposition has also yielded to the influence of good breeding and changed from that of an outlaw ready for conflict with man or beast, to the peaceable temperament belonging with propriety to the barnyard resident. His confirmation has been moulded by skillful methods from bony, angular, uncouthness into a structure of massive width, depth and thickness, affording a marvelous yield of pork and lard. This improvement in type and conformation of the "porker" has been in progress all these ages until a few years ago the breeders were halted in their progress by the cry from the pork producer, "Stop! you have gone far enough; you are producing a hog too small in bone, too short in body, and which does not impart size and prolificacy to the offspring. He is a beautiful creature to look at, will knock the 'persimmons' at fairs, and will attain size enough under a force system of feeding; but the question arises: Are these methods of feeding practical for the pork producer at large to follow for the most profit? No sooner had this complaint become prevalent until we faced about in this road of scientific improvement and progress, and went to the other extreme—went back to the type we were improving on a decade or two ago.

And now we see in swine papers headlines something like these: "The Big Type;" "Big as a Norman Horse;" "Four Inches Higher Than a Kerosene Barrel" some "Six Inches Higher Than a Kerosene Barrel;" "More Size, More Bone, Our Motto," etc. It seems that the American people are extremists. They have an uncontrollable desire for abnormal things, be it great or small.

It is not only so with the porcine tribe. We see this craze for certain fads in other lines of breeding. Take for instance the short-horn people who emphasized the one great point of color, discriminating against a roan until they had brought great damage to the breed. But the tide has changed and now the roans are sought for.

And just now there is danger in the Shropshire sheep business, lest too much stress be placed upon the well covered heads at the expense of the mutton form. If this line of breeding be indulged in too long it may be a detriment to the breed. And when the breeder awakens to this fact then the tendencies will be to the other extreme.

A few years ago the writer had the privilege of exhibiting the champion ten ears and the champion single ear of corn of the state. They were of medium size, uniform type and well covered butts and tips. They were easy winners. The next year we showed a similar sample of corn and did not get a pleasant look. The type had changed; the larger type was in demand elsewhere. Since that time each corn show increases the size of the most popular type, until they are giving premiums to corn that will not, in many cases, mature in our climate. And so it goes. It seems there is no fixed type to adhere to. Different individual breeders have different standards of excellence in other lines, as well as the hogs. Possibly in no other breed of live stock are the types so widely different as in the hog of today.

The question is, which is the correct type of a pork hog today? At Ames we are taught this thought should be kept in mind in breeding all meat producing animals, viz., that the ultimate end of all meat producing animals is the block. And that fact should not be lost sight of in selecting matrons for the herd, or judging breeding stock at fairs. We frequently hear hog breeders say, "We do not care for the pork type nor for the type the farmer demands—we sell to breeders." This is surely a mistake. There may be a few breeders that can sell all their stock to breeders, but the buyer must in turn sell to farmer pork producers. So the whole hog breeding business must be based on the fact that the ultimate end is the block. The selling of breeders is all right and the taking of premiums is grand, yet, if in producing breeders and winning premiums you divert the type by striving for an ideal whose ultimate and larger object is not the most economical production of pork, you have failed to meet the demands made upon you and the obligations you have assumed for the betterment of the hog kind. The pork hog is a specialist. It is his aim in life to eat and sleep, grow fat and die and raise the mortgage or educate the boys and girls, or perform any post-mortem financial operation the farmer elects. And the packers seem to prefer his death to occur at about 250 pounds weight.

Bixby, Swift's man, says 250 to 270 pounds is the popular type from now on. Sinclair's man, Mr. Abbott, says that about 250 or a little less. Of course there are a few exceptions to these weights, but 250 pounds seem to be the desirable weight. And they, the packers, made it the weight of the popular pork hog of today by offering the highest price on the weight that suits their needs the best. If the packers wanted five or six hundred pound hogs they could get them simply by offering the premium for that kind. It is the packers' needs we must supply. So then the question on hand resolves itself to this form: "What type of a hog will reach the desired weight of 250 pounds the quickest with the least feed and cut with the least waste." This question was asked the head hog buyer of one of the large killing concerns a few days since: "Which would you pay the most for, a load of big-boned, coarse hogs or a load of medium boned hogs that are smooth and well formed?" The answerer was: "Reason will teach you that we would discriminate against the large bones, big eared, thick skinned fellows for there is too much waste in killing. And as for the heavy boned, big legs that cost us seven cents and we sell out for three cents, we do not want, and we get enough bacon in our mixed loads. We want the big hams and broad backs."

The producer says, "We do not care what the packer wants or how they kill out, it is the weight we are after." But it must be remembered it is the packers' money we are after and we must meet his needs, in a measure.

But of course the farmer must have a vigorous hog, one that will rustle for a living and thrive on clover and rape, or one that will follow the feeding cattle and help make cattle feeding profitable. Not a great, rough, unfinished creature at maturity, but a hog of clean cut head, broad back and well sprung rib, full hams and good flinty bone, that will finish at nine months of age weighing about 250 pounds. I am not an advocate of the extreme in any line of hog breeding for the farmer, nor do I believe that over large bone in hogs is beneficial. Admitted there is a tendency in some cases to too fine bone and too small bodies. My preference is for a good, fair sized, flinty bone; it will carry more weight and stand more "grief" without breaking down than the large spongy kind. To buy a hog simply because he is large, without reference to quality, is as fatal to economic pork production as it would be to buy the little fine bone chuff.

The big, coarse, long-nosed hog, with ears as big as a blacksmith's leather apron, are not the market favorites, neither is the small, fine-boned hog popular or profitable for the farmer. Something between the two extremes will meet all the requirements of the breeder, farmer and the butcher. The happy medium will prove the climax of success.

No one would think, in selecting a car of feeding steers, of choosing the large, raw-boned fellows. To secure the highest profit for food and labor we must construct a special beef animal. Hence we must study the principals of special beef breeding. It appears to me it is the same way with the pork hog.

With the advance in price of land on which our products are raised, will the methods of by-gone days or those that now prevail to a measurable extent be profitably followed to the highest degree. We certainly must understand how to take advantage of special flesh making heredity for breeding is based on specialized heredity. The well bred, well fed pork hog is the emblem of American push, pluck and "get there." You cannot down him—he is the corn belt hog and is here to stay.

Let us put aside that pout, put aside that complaint about them being too small or too large, but put a shoulder to the wheel and push. His star goes up and sometimes goes away down, but never sets. The fact that it goes well down is the most reliable assurance that it will some day soar again in zenith. But the man who, as Abraham Lincoln says, "keeps peggin' away" will always enjoy the high prices.

The June meeting of the association is devoted entirely to the discussion of the program. The business meeting and election of officers takes place on Wednesday evening of State Fair week.

PART VIII.

PRODEEDINGS

OF THE

Thirty-Third Annual Convention

OF THE

IOWA STATE DAIRY ASSOCIATION

Held at Cedar Rapids, Iowa

NOVEMBER 16-17-18, 1909.

OFFICERS.

W. B. BARNEY, PRESIDENT	*Hampton*
F. W. STEPHENSON, VICE-PRESIDENT	*Lamont*
W. B. JOHNSON, SECRETARY	*Des Moines*
F. L. ODELL, TREASURER	*Ames*

The Iowa State Dairy Association met in its thirty-third annual convention at Cedar Rapids and was called to order Tuesday evening, November 16, 1909, at 7:45 o'clock, President W. B. Barney in the chair.

ADDRESS OF WELCOME.

BY MAYOR MEYER, CEDAR RAPIDS.

Mr. Chairman, Ladies and Gentlemen:

In behalf of the citizens of Cedar Rapids, I wish to bid this diarymen's convention a brief welcome to our city. We sincerely hope that while you are here it will be profitable both to yourselves and to all of the citizens of the state in becoming more familiar with the methods of handling dairy products. Cedar Rapids is doing what it can by enforcing ordinances to clean up the milk supply. We have passed ordinances providing for tuberculin-tested milk, using the regular government score card. It is therefore, with a great deal of pleasure that the city of Cedar Rapids and the city council welcome this convention.

Milk is the greatest of all food articles given to us by the great Father, because it is the first food we come in contact with and probably the last.

Cedar Rapids is operating under the commission plan, as adopted by Des Moines, and if any of you, while in the city, would care to visit the city hall and investigate the system, we would be pleased to give you all the time you desire to become familiarized with it.

I hope and believe you will have a successful convention and that it will prove beneficial to all. I thank you.

RESPONSE TO ADDRESS OF WELCOME.

BY E. R. SHOEMAKER, WATERLOO, IOWA.

Mr. President, Ladies and Gentlemen:

In behalf of the Iowa State Dairy Association I thank the mayor and the citizens of Cedar Rapids for the generous welcome we have received. We are always glad to meet in Cedar Rapids. We have been here before, and our coming this time, therefore, is no new thing. We appreciate the interest you have always taken and the splendid facilities you have provided for our meetings. We assure you we shall enjoy our convention here and thank you, Mr. Meyer, again for your hearty welcome.

PRESIDENT: We will listen to the report of the secretary, W. B. Johnson.

SECRETARY'S REPORT OF THE IOWA STATE DAIRY ASSOCIATION.

W. B. JOHNSON, SECRETARY, DES MOINES.

Ladies, Gentlemen and Members of the Iowa State Dairy Association:

It is with some degree of satisfaction that I stand before you and present for your approval the report of our last meeting, for two reasons. One is the financial condition, and the other is the success and advancement that the association has made in the past year and for the meeting which was pronounced by all present at Waterloo the best meeting we have ever held in our 32 years' existence.

Following is the report:

Financial report of the Iowa State Dairy Association for the year ending July 1, 1909.

July 1, 1908—	Receipts	Disbursements.
Balance in treasury	$1,456.21	
Interest received	27.79	
July 1, 1909—		
Advertising receipts	465.00	
Contributions received	735.00	
Butter sales	1,200.10	
Membership receipts	289.00	

January 1, 1909—		
Interest on deposits	21.94	
July 1, 1909—		
Interest on deposits	33.75	
Expenses as per items		$2,638.63
Balance on hand July 1, 1909		1,590.16
	$4,228.79	$4,228.79

Yours,

W. B. Johnson,
Secretary.

Statement of receipts and disbursements as received from Mr. F. M. Brown, former treasurer, from July 1, 1908, to April 1, 1909, inclusive, the time I took the books.

RECEIPTS.

July 1, 1908	Cash on hand	$ 1,456.21
July 1, 1908	Interest from Jan. 1st to July 1, 1908	27.79
Sept. 25, 1908	Standard Oil Co	25.00
Sept. 25, 1908	Wells Richards Co	15.00
Sept. 25, 1908	Gude Bros.	20.00
Sept. 25, 1908	Lesserman Bros.	5.00
Sept. 25, 1908	National Creamery Supply Co	10.00
Sept. 25, 1908	Fitch Cornell	10.00
Sept. 25, 1908	Jas. Rowland & Co	10.00
Oct. 9, 1908	Chas. P. McCabe	10.00
Oct. 9, 1908	Geo. M. Rittenhouse	5.00
Oct. 9, 1908	Brown and Root	5.00
Oct. 9, 1908	W. J. Stewart	5.00
Oct. 9, 1908	Chas. H. Zinn	10.00
Oct. 9, 1908	Jacob Jacobson	15.00
Oct. 9, 1908	F. H. Spieller Co	5.00
Oct. 9, 1908	E. Decker & Co	5.00
Oct. 9, 1908	Lambly & Alpaugh	10.00
Oct. 9, 1908	W. B. Hershey	5.00
Nov. 2, 1908	Fox River Butter Co	10.00
Nov. 2, 1908	Pettit & Reed	5.00
Nov. 2, 1908	National Creamery Supply Co	15.00
Nov. 2, 1908	Eastern States Rep. Co	5.00
Nov. 2, 1908	Enyard & Godley	10.00
Nov. 20, 1908	Membership	283.00
Nov. 20, 1908	Colyer & Co	10.00
Nov. 20, 1908	Chris Hansen	5.00
Nov. 20, 1908	Frank Holmes	5.00
Nov. 20, 1908	Chamberlain Mfg. Co	10.00
Nov. 20, 1908	Hershbein Supply Co	10.00
Nov. 20, 1908	H. E. Fowler	5.00
Nov. 20, 1908	City Waterloo	350.00

Nov. 28, 1908	Northy Refrigerator Co	15.00
Nov. 28, 1908	Elgin Butter Tub Co	10.00
Nov. 28, 1908	J. G. Cherry Co	40.00
Nov. 28, 1908	De Laval Sep. Co	40.00
Nov. 28, 1908	Creamery Package Mfg. Co	45.00
Nov. 28, 1908	Torsion Balance Co	10.00
Nov. 28, 1908	Sharpless Sep. Co	20.00
Nov. 28, 1908	Chris Hansen Lab	5.00
Nov. 30, 1908	Pitt Barnum & Co	5.00
Nov. 30, 1908	Zimmer & Dunkak	10.00
Nov. 30, 1908	Iowa Dairy Sep. Co	35.00
Nov. 30, 1908	P. F. Brown & Co	10.00
Nov. 30, 1908	Johnston & Coughlan	10.00
Nov. 30, 1908	Wells Richardson Co	10.00
Nov. 30, 1908	S. B. Friday	5.00
Dec. 11, 1908	Jensen Mfg. Co	25.00
Dec. 11, 1908	Diamond Crystal Salt Co	15.00
Dec. 11, 1908	John School & Bros	5.00
Dec. 11, 1908	Fred Bishoff	10.00
Dec. 11, 1908	Waverly Oil Works	10.00
Dec. 11, 1908	J. B. Ford & Co	20.00
Dec. 11, 1908	Gude Bros. (Sale of butter)	1,183.60
Dec. 15, 1908	Membership	1.00
Dec. 15, 1908	Vermont Farm Mfg. Co	10.00
Dec. 15, 1908	Lepman & Hegge	10.00
Dec. 15, 1908	W. B. A. Jurgens	10.00
Dec. 15, 1908	National Creamery Supply Co	10.00
Dec. 15, 1908	R. W. Johnson	10.00
Dec. 15, 1908	Coyne Bros.	10.00
Dec. 15, 1908	Chris Hansen Lab	10.00
Dec. 15, 1908	Irwing Hotel	5.00
Dec. 15, 1908	Elov Erricsson	5.00
Dec. 15, 1908	Logan Hotel	5.00
Dec. 15, 1908	Worscter Salt Co	15.00
Dec. 15, 1908	A. H. Barber Supply Co	20.00
Dec. 15, 1908	International Salt Co	20.00
Dec. 15, 1908	Farm Handy Wagon Co	20.00
Dec. 15, 1908	B. C. Illiff, Sale of butter	5.50
Dec. 24, 1908	J. J. Ross, Sale of butter	11.00
Dec. 24, 1908	Spurback Lambert Co	25.00
Feb. 14, 1909	Corn Products Co	1.00
Feb. 14, 1909	International Harvester Co	10.00
Feb. 14, 1909	H. C. Hargrove	24.00
Feb. 14, 1909	Miller Tyson Co	10.00
Feb. 14, 1909	William Galloway	10.00
Feb. 14, 1909	Interest from July to Dec. 31, 1908	21.94
	Total	$ 4,195.04

DISBURSEMENTS.

July	21, 1909	H. R. Wright	$ 16.68
July	25, 1909	W. B. Barney	10.11
July	25, 1909	L. S. Edwards	4.02
July	25, 1909	F. M. Brown	6.75
Aug.	1, 1909	Bond treasurer	10.00
Aug.	27, 1909	W. B. Barney, ex-Des Moines	9.80
Aug.	27, 1909	F. M. Brown, ex- Des Moines	13.60
Oct.	3, 1909	Fred L. Kimball, estate	230.49
Oct.	17, 1909	F. M. Brown, expense	6.30
Nov.	18, 1909	Expense premium fund	60.00
Nov.	20, 1909	Express on butter	83.38
Nov.	20, 1909	Making out reports	4.50
Nov.	20, 1909	F. M. Brown, expense	13.85
Nov.	20, 1909	T. J. Julian	12.75
Nov.	20, 1909	W. B. Barney	8.83
Nov.	20, 1909	W. B. Johnson, expense	183.19
Nov.	20, 1909	Wisconsin Dairy Mfg. Co	100.00
Nov.	20, 1909	Pro rato fund	1,050.00
Nov.	20, 1909	Exchange on checks	.60
Nov.	25, 1909	John Bowers	12.16
Nov.	25, 1909	Jules Lumbard, Ellis hotel	7.50
Nov.	25, 1909	Edgar R. Lytton	12.85
Nov.	25, 1909	Expense butter hall	26.40
Nov.	30, 1909	Exchange on checks	.20
Nov.	12, 1909	E. T. Saddler	50.00
Nov.	12, 1909	C. H. Eckles	25 00
Nov.	15, 1909	Exchange on check	.20
Nov.	26, 1909	W. B. Johnson, salary and expense	193.90
Nov.	26, 1909	Fred L. Kimball, estate	274.83
		Total	$2,427.89
		Receipts	$4,195.04
		Disbursements	2,427.89
		Total amount received from Brown	$1,767.15

Statement of account from April 1 to July 1, 1909:

April	1, 1909	Cash on hand	$1,767.15
June	30, 1909	Interest from January 1st to July 1, 1909	33.75
		Total	$1,800.90

DISBURSEMENTS.

April	5, 1909	J. S. Anderson & Co., (bond)	$10.00
April	26, 1909	W. B. Johnson, expense	9.90
April	26, 1909	W. B. Barney	38.65
May	3, 1909	H. F. Byer	1.23

Disbursements—*Continued.*

May 20, 1909	Fred L. Kimball, estate	112.86		
May 20, 1909	W. B. Barney	23.20		
May 20, 1909	L. S. Edwards	14.90		
		$210.74	$	210.74
	Balance on hand July 1st			$1,590.16

F. L. ODELL,
Treasurer Iowa State Dairy Association.

(The report of Treasurer Odell was read and being the same as that of Secretary Johnson, was unanimously adopted.)

President: I believe the chairman of the auditing committee is in the room, and I will call for his report.

Mr. Parker: We have checked the accounts of the secretary and find them to be correct.

President: The next is the appointment of the different committees. The legislative committee has done such good work the past year that I have seen fit to leave it just as it was, as we may have use for some more of that kind of work another year. I therefore reappoint as the legislative committee E. R. Shoemaker, Waterloo (chairman); W. W. Marsh, Waterloo; W. B. Quarton, Algona; B. W. Newberry, Strawberry Point; F. A. Leighton, Des Moines. Resolutions: H. R. Wright, Des Moines; F. W. Stephenson, Lamont, and F. W. Jacobs, Cedar Falls. Auditing: F. W. Mack, D. W. Parker and Gay Miller.

Johnson: The next is the address of our president, whom I think, needs no introduction, Mr. W. B. Barney.

PRESIDENT'S ADDRESS.

W. B. BARNEY, HAMPTON, IOWA.

Gentlemen of the Iowa State Dairymen's Association:

The time is again at hand, when we may look back over the road we have traveled for the past year with no little degree of satisfaction as to what has been accomplished.

For a number of years we have been asking our legislature for funds so much needed for educational work in our state. This year, through a well planned campaign, they were given to understand better than ever before, the real needs of the dairymen, and we were given $10,000 for the biennial period. While this is a very moderate allowance for the work at hand, it is a start in the right direction, and with the donations that are coming in from our friends, we hope to make a showing that will make it comparatively easy to secure $15,000 or $20,000 a year from this winter.

To the man who thought that with this appropriation secured, the work was done, I wish to say that it is only begun. The question now most important is, how can it be used to the very best possible advanttage.

To those not familiar with the work during the session of the legislature last winter, I will say that it was only by reason of hard work in both the senate and house on the part of a few good friends, members in both places, that our association was able to accomplish what they did.

Your officers and legislative committee must make their pledge good, that every dollar of this money must be used and accounted for by them for the general good and uplift of the dairymen over the entire state. These funds must be used in the same careful way as we would make expenditures in our own business, always keeping in mind that the careful and judicious use of this, will lessen the work of securing another appropriation. In arranging with H. G. Van Pelt as dairy expert, your board felt that they were securing the very best man available. His work up to this time, is the best of evidence that they used good judgment.

It is now up to the members to help him in the work we want done. He is your servant, and we know he is anxious to serve you well. There are so many lines of work to be taken up, that he will not lack for employment. The most important among which we might mention, are cow testing associations, small conventions or short courses in dairying, furnishing speakers for chautauquas, fairs, dairy picnics, creamery meetings and dairy trains. The extention and Dairy Department at the college have very generously offered us all possible assistance in this work. The dairy spirit permeates the air in Iowa. To those of us who have been looking forward for years for the dawn of these conditions, it is with no little degree of pride that we point to the advancement made in the last five years. The prejudices have worn away. The man who by reason of bringing a dairy-bred bull into a neighborhood, was looked upon as an undesirable citizen, is now considered by many, a benefactor. It is right that he should be.

The first cattle I was ever interested in, in Iowa, were a lot of two-year-old heifers and young cows. I put them in a herd in May, to be cared for at $1.00 each for the grazing season of about six months. They were herded on what was then known as speculators land, one man with a pony caring for about 500 head. This prairie or herd land, was worth from $5.00 to $15.00 per acre. Today this same land is selling at $75.00 to $125.00. This is easily understood that while there was a little money in keeping a cow for her calf alone in former years, there would be nothing left for profit now.

It is the history of all countries, that as land becomes valuable, the dairy cow comes into her own. A cow producing only 150 pounds of butter per year, should be kept long enough to be bred to a high class dairy sire, and get a heifer or two out of her that will increase this to at least 200 lbs. I say dairy sire, as I know of many good herds that have been bred up in this way.

I cannot call to mind an instance, at this time, where a good herd of dairy cows have been produced by the use of what may be termed a dual purpose bull.

It is too much of a tax on my imagination to believe that a breed that has reached such a degree of perfection as a beef breed, that they have to resort to the use of nurse cows for rearing their young, have a great deal of the milking qualities left of twenty-five or thirty years ago.

In a former address, I called your attention to the advantage of a neighborhood or community coming to an understanding, and so far as possible buying the same kind or breed of dairy bulls. The supply of grade cows at good and profitable figures, is never up to the requirements where grades can be had by the car load. I have at this time many inquiries for grade Holstein Friesians, that cannot be supplied, and this, I know is true of the Guernseys, Jerseys and other dairy breeds.

Another advantage of community breeding is that bulls may be traded, until they have outlived their usefulness. It is a well established fact, that aged sires are preferable to young ones. Too many good sires are sent to the block, long before their value is known.

I think a very common error among those establishing a dairy herd is that they do not buy at least a couple of registered heifers or cows when they start in. It is surprising how soon a pure bred herd can be built up.

We frequently hear parties say they cannot afford to pay $100.00 for a pure bred sire. The increase in value on the first ten heifers sired by any good dairy sire, will more than make good the cost price and no man establishing a dairy herd, can afford to pay less than $100.00 for a sire, neither can a breeder afford to sell one for less money.

The careful application of the business methods and principles that have made such houses as Marshall Field & Co., and other great institutions what they are, could well be brought to use on our farms.

How many of us take an inventory during the year?

Many of us only know that we have a little more, or perhaps less money to our credit account at the end of the year, than the previous year. I think it quite as important that the dairyman and creameryman know how he stands at the end of the year as the merchant. Have you ever thought that it frequently takes the merchant several days to do this work, when you can do it in as many hours?

It is a source of a great deal of satisfaction to look back over the years that are gone, and note the changes in values. I would advise the use of a book for this purpose. By reference to a couple of them kept in a safe at Home Farm, I can tell you the market price of hay, grain and feed of the various kinds. How many cattle were on hand, what a yearling, two-year-old or cow was worth, or the price of horses, hogs or poultry, or anything else ordinarily kept on a dairy farm, for the last twenty years. This is only one item of the many that I might refer to.

Always keep in mind this fact, that you will not cheat anyone but yourself, by not doing what you attempt, the very best you know how, and that diligence is the price of success in any occupation.

I am frequently asked how I can keep help to milk forty or fifty cows. I do not ask this help to do a hard days work in the field, and then milk on time that rightfully belongs to them for rest. A good man can earn just as much money milking a good cow as he can in any other employment, but he should not be asked to stay in the field or at other work until 7 p. m. and milk eight or ten cows after this time.

To me, the interest the butter maker is taking in the improvement of his patrons cows, is most reassuring. It is well that he should. The increased production of the herds delivering cream or milk to his creamery, means profit to his creamery, and better wages for himself. No man is in a better position to help make the necessary increase in the production of our dairy herds, than he. Coming in touch with his patrons nearly every day, his influence has much to do with shaping their course. We have always felt that the closer they were drawn together, the better for both. The grand success of the last National Dairy Show and the National Creamery Butter Makers' Association, held at the same time, is evidence of the truth of the old saying, that in union there is strength. We know of no reason why these meetings should not continue to be held at the same time and place.

We may expect to be called on this winter to face the oleo issue again. We agree with Gov. Hoard that if we are, it should be a fight for its extermination. With the millions that are behind this greatest of all frauds, we must remember that nothing but the generous support of The National Dairy Union will place them in a position to hold the ground we have gained in the past, or prevent legislation that is adverse to our interests.

There is a very general feeling that the State Board of Agriculture is not giving the dairy breed of cattle the attention they merit, and that a little well directed effort on their part would bring out a much larger showing at our state fair. We would recommend the appointment of a committee of three representing this association, to meet with the board in December. We have assurance that they will be glad to co-operate with us in this matter, and believe they will be willing to do all they can to increase the exhibit of the dairy breeds at the next fair.

We know of no state college that is better equipped for the work that will be required of it, than ours at Ames. We have one of the best dairy buildings in this country. The dairy farm, added within the last few years is well suited to the purpose for which it is intended.

What is most needed now are better representatives of the different dairy breeds, and a well directed effort on the part of those in charge of the farm, to make a showing that is in keeping with the other departments of the school of which we are all so justly proud.

The dairy and creamery interests of the state are certainly under obligations to W. W. Marsh for having made possible the Marsh test. This test is far reaching in its influence, extending even to other states. It has helped to put Iowa on the map as one of the great dairy states, and made our neighbors sit up and take notice.

It is to be regreted that our legislature did not pass an act last winter for the suppression of tuberculosis among our cattle. The bill providing for partial compensation of condemned cattle, has been very satisfactory in Wisconsin and several of our sister states. This association should use its influence for such an act, when our law makers meet again.

In adding the cattle exhibit in a small way as a feature of this convention, your board has done so, hoping it may grow into a regular fall dairy show to be held in connection with this meeting.

This convention always feels at home in Cedar Rapids. We are always given a royal welcome to the Parlor City. It has been our pleasure to hold several other meetings in your beautiful city and they have never failed to be a success in every respect. We hope that with the generous support always accorded us by people and press to make this by far the most profitable meeting in every way, we have ever held.

In closing, permit me to express to the officers and members, my sincere appreciation of their loyal support of my efforts to build up and broaden the work and influence of this association. We must all remember that with the new responsibilities, come new obligations on our part that will require still further effort. Pecuniary compensation for a work of this nature, would be only a small measure of reward, as compared with the satisfaction we should feel at having been instrumental in placing Iowa where she should be, in the very front rank of dairy states. I thank you.

President: The next will be an address by Hon. H. R. Wright, State Dairy and Food Commissioner:

ADDRESS.

H. R. WRIGHT, FOOD AND DAIRY COMMISSIONER, DES MOINES.

This is the eighth successive State Dairy convention program on which my name has appeared in the opening session. I have not attempted at any of the conventions to instruct any of you upon the art of buttermaking, largely because I don't know how. Not being an expert upon the scientific side of buttermaking there has been more opportunity to observe the whole field of dairy and creamery operations. Sometimes one holds some small thing so close to his eye that he fails to see the larger things at a distance, and while to point out the presence of faults and difficulties is valuable, it is not less valuable, perhaps, to point out once in a while the progress that has been made, and predicate upon that progress greater advancement for the future. Instead of weeping over the mistakes of the past, and from them foretelling disaster and misfortune for the future, we ought rather to contemplate the victories and achievements of the past and from them point out to one another just how we are going to improve them. I remember a boy sat by the wayside bemoaning the fact that he had one sore toe, but when the band began to play he remembered that he had nine other toes that were not sore and he used them in keeping up with the procession.

Eight years ago the silo was a curiosity in Iowa, now every community has its silo and the manufacturers of silos are working night and day to keep up with their orders. A decade ago people laughed when farm institute instructors talked about protein and balanced ration and the selection of proper animals. Now this association is able to hire a man who is an expert to make that sort of talk to an eager waiting audience of dairymen. Eight years ago it was as much as a dairy commissioner's job was worth for him to allege any merit for a Jersey, Holstein, or a Guernsey cow; now there is scarcely a community in the state that does not have good representatives of one or all of these breeds and their owners setting a good example to their neighbors. It is only five years since the legislature made the first specific appropriation for a dairy building, for a dairy farm and for a dairy herd at the agricultural college. It may be true that we are not advanced as much in dairying as are some of the eastern states, where the art has been practiced for a hundred years; it may be true that other states have advanced more rapidly than we because compelled to do so by a harsh climate and a refractory soil, but if you investigate and compare you will find that the boasted pre-eminence of other states is by reason of some small spot that is used for advertising purposes, and that the state of Iowa not only produces more butter than any other state, or any other country anywhere of equal size, but that she produces it at a better profit than it is produced elsewhere, but that her possibilities of soil, and climate, and people and previous history and present conditions are unbounded, that they are single and alone when comparisons are attempted.

And we have made some considerable advancement in the creamery business. Ten years ago the manager of a local creamery was a monopolist, he controlled the product in his small territory. He and his patrons were satisfied with slipshod methods on his part and upon the part of the buttermaker, and that is what they received. The chief requirement for a buttermaker was that he should be able to run the not too complex machinery and that he should work cheap. The creamery over run was 10 per cent, or 8 or 5 and that was plenty good enough. The creameries averaged 75,000 or 80,000 pounds of butter per annum and it cost from three cents to five cents a pound to make it. But what a change has taken place. The creamery manager must actually manage a real business because he must meet competition of various kinds. His patrons are no longer satisfied with methods that are "plenty good enough;" they constantly demand the best. The buttermaker must be an expert and accordingly he gets $75 or $100 or $125 instead of $35 or $40. The local creameries make an average of 140,000 pounds each per annum and it costs them 1.8 cents a pound to make it. A saving of a cent a pound means a million dollars in Iowa's creameries. These creameries now get an over run of 18 to 20 per cent and every 3 per cent increase in over run means another million dollars annually in Iowa. These millions now saved in better creamery management and by better service by the buttermaker are not altogether worthless.

One of my earliest recollections of the creamery business is that of complaints of creamery managers and operators of the poor quality of milk received, they said the farmer didn't strain the milk, that he let it get sour, that the irresponsible cow ate bad tasting weeds, that cans were sometimes not too clean. We have always heard the same complaint about milk and cream and we always will for the reason that the ideal is never reached, and until it is very nearly approached we shall never be satisfied and will continue to make complaints. Once in a while some fellow gets hold of an exceptionally bad case and alleges that it is an example exactly like all the other cases that he has never seen. He gets the one small fact so close to his eye that he can't see anything else at all. I am one of those who believe that even in the quality of hand separator cream great advancement has been made. I have reports made by the assistant commissioners in the last twelve months of the score of butter in 391 separate creameries, and only 39 or 10 per cent of them are below 90, and in only thirteen of these creameries did the assistant commissioners report any really bad cream received. The receivers of butter in the markets report improvement in the quality and creameries report increase in the prices they now receive from a constantly more critical market.

But whatever measure of success has been attained, the reason nack of it is the main thing after all. The first and best reason is that the state is adapted to the dairy business. The soil, the climate, the crops, the people are all particularly adapted to this industry, and while natural conditions are not so hard in Iowa as to compel our people to milk cows, yet there is no place in the world where the returns for intelligence and effort put into the dairy business may be so great, so that notwithstanding the difficulties incident to the development of a business so widely scattered as is the dairy business and notwithstanding the changes of systems that have occurred in the last ten years, yet natural conditions have been and are such that great progress has been made so that now the creamery system is established upon a firm basis. The second and not less important reason for success that has been attained and for success that still remains for us in the future is the fact that the state has such a loyal army of boosters. It is true that we have had our differences of opinion in regard to hand separators and the shipping of cream, and that we have not always agreed about some other things, but nevertheless the dairy school, the dairy papers, the dairy officials, the salesmen of dairy and creamery appliances and supplies, the buttermakers and the creamery managers have been working together all the time, not wholly for their own selfish interests, but for the good of the industry as a whole. If there has been once in a while one in the ranks who was inclined to hang back he has been quickly supplanted, and in the main every one has been helping everybody else and doing all the work he could for progress.

The dairy business of the state has but one enemy outside the ranks, and it always will have that one. A little outside opposition will be good for us. The success of the future depends upon the continuation of the harmony that has existed in the years gone by, it depends upon every one of us individually and collectively and in proportion to our efforts or lack of them will be the progress or failure of the future. Nothing can prevent the growth of the industry so well suited to the state but a little selfishness on the part of any of us can retard that growth.

The state has a wonderful record as a dairy state for thirty years and it has still more wonderful possibilities for the future. Our 100,000 creamery patrons ought to become 200,000 in the next ten years, our 100,000,000 pounds of butter made ought to become 200,000,000 or even 400,000,000 pounds in the next decade. We are just now at the beginning of a new era in the dairy business of the state. There are new forces at work, there are new developments beginning and we may confidently look for much greater advancement in the future than in the past. We have a right to be proud of what has gone before in the dairy and creamery business of this state but we shall have more reason for selfcongratulation in the years to come when the ideals toward which we have each been striving shall have been more nearly reached. I thank you.

WEDNESDAY MORNING, 10 O'CLOCK.

President: You will please come to order. We have with us this morning the president of the Nebraska State Dairymen's Association, and he is also a live wire in the college there. I am pleased to introduce to you Prof. Haecker, of Nebraska, who will talk to you on the silo.

SILOS.

PROF. HAECKER, PRESIDENT NEBRASKA STATE DAIRY ASSOCIATION, LINCOLN, NEB.

Mr. Chairman, and gentlemen of the convention:

This is, I believe, the first time I have ever had the privilege of attending a meeting of Iowa dairymen, and I assure you it is a pleasure, because I know here are gathered the boosters of the great dairy business in this state. I am familiar with the work you are doing and we in Nebraska are delighted over your recent boom. I feel that it behooves a new era in Iowa dairying.

The times are very ripe for the silo, and this does not imply that the silo has not been a good thing in the past or that those who have had silos for ten or fifteen years are ahead of their time, but conditions today make the silo more necessary on the average stock farm than they ever were before.

Land has greatly increased in value and must now earn more than it did in the past. Not only has the price of land increased, but also the cost of roughage and grain, which increases, materially, the cost of feeding stock. Labor has also advanced and as the silo is a labor saving device for feeding cattle, it should be reckoned in this light. The increased production of alfalfa hay has been used by some farmers as an argument in opposition to the silo, counting that with good alfalfa hay, they did not need corn ensilage. This I wish to use as a argument for the silo. If a man has alfalfa hay in abundance, then he certainly needs corn ensilage, for as the engine needs coal, it also needs water. In the past, the expensive part of a stock ration was digestible protein and all rations were figured on this basis, when accounting for their cost and value. With alfalfa hay in abundance, the protein side of the ration is well taken care of and the next consideration is to find a cheap succulent form of carbohydrates. Here is where corn ensilage is unexcelled. By combining these two great food stuffs, alfalfa hay and corn ensilage, we have the cheapest and best source of economic stock feeding.

The silo will be instrumental in promoting winter dairying and by winter dairying, the profits in the dairy business will be doubled. I was informed recently by a creamery man operating in Nebraska, that his butter output during the three months of the summer was equal, in volume, to the other nine months of the year. This necessitates, naturally, a great waste of equipment and labor on the part of the creamery, and as far as the producer is concerned, it is useless to mention the wastefullness of such a method.

The silo will also, to much extent, save labor in feeding and caring for the stock. To have a large supply of succulent forage close at hand, always in good condition, in all kinds of weather, is no small item for the feeder. Those who prefer corn fodder or stover to silage, will admit that their system is very disagreeable during the winter months when the snow and ice have covered the forage and often rendered it totally unfit for stock food. The present custom of allowing the stalks to remain in the field, where they are for a few weeks gleaned by the animals and the balance of the winter, wave as scare-crows in the chilly winds, certainly should be discontinued, for while it is evident this system will be in practice for many years to come, it cannot be profitable to the stock farmer.

It is needless for me in this presentation of the subject to discuss the merits of corn ensilage as a ration for stock. Sufficient experiments have been carried on by hundreds of practical feeders and many Experiment Stations during the past twenty-five years to well establish the fact that corn ensilage is a good succulent ration and one which in many respects, takes the place of pasture. I wish to devote my time principally to the dollars and cents side of the question. In casting about for good reasons why more farmers and stock breeders do not have silos, I have found a few arguments which I will here attempt to answer. One of the first and most frequently heard is that the silo is an expensive equipment and only those who are well-to-do can afford to maintain one, in other words, they feel too poor to build a silo. Another reason why they do not have a silo is because they claim they have plenty of other feed, in fact they have feed to sell. In answering the first, I will offer a table, which I have compiled from various reports and which is an attempt to give liberal valuations as to the cost and conservative estimates as to yield.

As corn silage is not sold on the market and has no quotations, its value must be found by carefully ascertaining the cost. To find the cost of producing corn ensilage, much averaging is necessary for no two farms report the same figures. In the tables here given, I have taken results from the states of Wisconsin, Iowa, Kansas and Nebraska, and I find the variation among the states much less than would be supposed.

Table showing cost of growing silage corn:

Rent of land, per acre	$4.50
Plowing and harrowing	2.00
Seed corn	.25
Planting	.30
Harrowing and cultivating 4 times	2.25
Total	$9.30
Yield 13 tons per acre, cost per ton	$ .72

COST OF FILLING THE SILO.

11 Men at $2.00 per day	$22.00
7 Teams at $2.25 per day	15.75
1 Traction Engine, per day	5.00
1 Engineer	2.00
To coal	1.00
Total	$45.75
Silage cut per day, 75 tons, cost to put in Silo, per ton	$ .63
Cost of Silo and Harvesting Machinery	600.00
Interest at 6 per cent	36.00
Depreciation and Repairs	58.00
Taxes and Insurance	6.00
	$100.00
Cutting 400 tons, per ton	$ .25
Cost putting in Silo	.88
Cost Growing Corn	.72
Total cost for two or more farms, per ton	$ 1.60
Cost of 150 tons, one farm, per ton	$ 2.02

From the tables here given, it will be seen that an attempt has been made to cover all expenditures liberally and even such items as depreciation and repairs of machinery, beside taxes and insurance are counted. Two total results are given: one intended for farmers who co-operate in their work and use one equipment for filling two or more silos. Naturally it will be seen that such a method would greatly reduce the total cost of the ensilage. Even though the farms are several miles apart, it is not difficult to transport the harvesting and cutting machinery and certainly it is advisable when realizing that the saving in the expense of making ensilage by this method is from forty to fifty cents per ton. Where four or five silos are filled on as many farms the total cost of ensilage would be but $1.50 per ton, while one farm, putting up 150 tons without co-operation or assistance, the cost would be about $2.00 per ton.

It is often argued that it is impossible to find the necessary labor to put up the ensilage at the proper time. This in some cases no doubt is a vexing problem, but where it is possible to get the grain threshed in shock or stack, it is also possible to put up ensilage by the same labor system. Silo filling time comes as a rule between shock and stack threshing and it would not be difficult in most communities, by arranging ahead of time, to get sufficient help to put up the ensilage. If there are two or more silos in the community, it is quite easy to put up the ensilage and do it with the greatest economy.

I am often asked concerning the relative value of different kinds of hay and silage. It should be understood that such comparisons are difficult and do not illustrate the full value of the ensilage, for it does not value the succulent nature of the ensilage, or its cooling, appetizing effect on digestion, as with bluegrass, when analyzed, fails to show any marked abundance of nutriment and yet we know the beneficial effect of the food. Waiving then, the most valuable qualities in corn silage, we can compare it with hay as follows:

Value of Corn Ensilage based on digestible carbohydrates:

1 ton of ensilage	1 ton Sugar Beets
3 tons of ensilage	1 ton Clover Hay
3½ tons of ensilage	1 ton Alfalfa Hay
2¼ tons of ensilage	1 ton Marsh Hay
3½ tons of ensilage	1 ton of Prairie Hay
½ ton of ensilage	1 ton Pumpkins

In a rude way this table has been compiled to avoid fractions of tons given in terms of pounds. It must, therefore, be considered a rough estimate. However, basing the value of hay at the present price, it will be found that corn ensilage in every case is a cheaper food. The feeding value of corn ensilage, based on present prices of food stuffs, I have placed at $5.00 per ton. This is giving ensilage due credit, not only for its digestible nutriments, but also its succulency. Sugar beets are generally based at this price and as the two are about equal in feeding value we may use the one to base the price of the other. From the figures already given, it will be noticed that the cost of producing corn ensilage under the most expensive system is about $2.00 per ton, which gives this food a decided advantage over beets in respect to cost.

One of the benefits of the silo which is of no small consequence, is its great economy of storage space. We find from estimates made by different Experiment Stations that the weight of a cubic foot of corn ensilage varies from thirty-five to fifty-five pounds, according to the amount of moisture the ensilage carries and to the location in the silo, as to near top or bottom.

The following table will show the difference in the space required by hay in mow as compared with ensilage in silo:

1 ton of ensilage	50 cubic feet
1 ton of hay	500 cubic feet
1 ton of ensilage, cost to put up	$ .63
1 ton of hay, cost to put up	1.50

It will be seen that ten times more space is required for hay than ensilage and I do not believe it possible to construct, even a cheap hay shed, to say nothing of a barn, for the price required to store the same amount of ensilage. With the ordinary hay loft in a good dairy barn, the cost of storage space would be three times that of the silo.

The table also gives a comparison between the cost of harvesting corn ensilage as compared with hay. It will be seen from these figures that corn ensilage can be put up for nearly one-third the cost of harvesting the hay. These figures do not allow for interest on money invested in machinery or storage. While hay is about three times richer in food elements, it is still an expensive roughage as compared with silage for stock.

In summing up the subject, it is safe to state that until the feeder can find a food equal to corn ensilage for even twice the cost, he had better seriously consider the silo. Under present conditions, I believe that one-fourth of all the farmers keeping stock in the corn belt, will find the silo an economic equipment. An acre of corn put in the silo I value at $55.00, while the same corn standing in the field and husked in the usual manner, I value at $27.00. This is accounting for all cost of harvesting. Then an acre in the silo is worth two in the field, or putting it another way, the silo doubles the value of the corn crop.

By using the silo to furnish carbohydrates and the legumes to furnish the protein, we need have no fear of making a fair revenue from our land, even though it increased in value three-fold and we receive the same prices for our products. We are, indeed, a fortunate people to be located in a country where we can produce these two great food elements so cheaply and easily. Now is the time for the farmer to study the silo subject as he never did before. Get Silowise and don't be afraid to be the first in your community to take up the enterprise. This is my advice to the dairyman and stock farmer. I thank you.

DISCUSSION.

President: I am sure you all have listened with interest, as I have, to this splendid presentation of the silo. It has been in such a practical way that I feel you have gotten a great deal out of it. I would like to see a full and thorough discussion. My first address before the Iowa State Dairy Association was on this same thing about twelve years ago, when I made a little talk before the farmers institute at Des Moines. I predicted that the day would come when silos would be as numerous as corn cribs in Iowa, and I believe it is rapidly coming to pass. I want you, while we have Prof. Haecker with us, to ask him all kinds of questions.

Member: I would like to know the professor's views on refilling the silo—taking corn that has been cut and shocked and later in the season how it would work to fill the silo with it.

Prof. Haecker: I have had no experience on that, but I presume that would be very much the same as good corn fodder or shredded corn. I do not think I would advocate that because the main object of silage is to provide some succulent feed. You would lose the succulency so you would not gain very much.

Shilling: I am an enthusiastic silo man. I take the position that there isn't a man on a farm in the State of Iowa with the present values of land who can afford to be without one. I wouldn't try to run my farm today without a silo. I believe that there is nothing in the world that a farmer can mortgage his farm to build except a silo. You will get your money back with greater dividends than in any other way. Farmers today can not afford to own the land without feeding silage.

Haecker: I believe if I lived in a locality where there were two or three silos I could fill my silo for 50 cents a ton, but I have figured conservatively. To make a long story short, I have found with the most conservative figures, allowing a good price for the corn and for the help that I can just simply double the money value of an acre of corn. I have been pounding away in Nebraska for 13 years talking the silo. I say with the utmost confidence in the statement that one farmer out of every four who keeps stock in the State of Iowa would be greatly benefited by a silo, and I will say the same thing for Nebraska, Illinois, Wisconsin and Kansas.

President: I would like to hear from Mr. Hill, of Rosendale, Wis.

Mr. Hill: I am glad to add my testimony in favor of the silo. We have used ensilage on our farm for 22 years. Mr. Shilling voices my sentiment exactly. I really would not want to continue in the dairy business unless I could have ensilage. It seems strange to a man who hasn't had experience with a silo to think that a cow would come in off of green pasture to eat ensilage, but she will do it. After 25 years of pegging away Wisconsin is coming into her own in the silo business. There were built in Wisconsin last year one-third as many silos as there were in the state, and I look forward to the time when not one out of four but nine out of ten of our farmers will be feeding ensilage. In the neighborhood where I live there are 55 silos, so I say Wisconsin is making progress in building silos.

Member: I would like to ask a question about the effect of silage on butter. I built a silo this summer and my neighbors tell me that silage has a bad effect on the flavor of butter.

Haecker: I do not think it would. Of course if you fed nothing but silage and fed just previous to milking it might take a little flavor, but we haven't had any trouble that way. If it did Wisconsin butter would be branded as ensilage butter. In Nebraska we are going to make a special day, January 20th, as "silo day." Our people are coming to know that we can not increase our dairy business without a silo. We must have more winter dairying. Six great centralized creameries make in three months as much butter as they do in the other nine months. We must have the silo in order to encourage winter dairying.

President: When I looked out and saw the storm this morning I congratulated myself on the fact that I had thirty acres of corn in the silo. There is an advantage that is worth a great deal.

President: I am sure we have all enjoyed and profited by Prof. Haecker's talk. We will now hear from Dr. Roberts. He has had several years' experience in the cow business and has been state veterinarian in Wisconsin for a great many years.

DISEASES OF CATTLE.

DR. ROBERTS, WISCONSIN STATE VETERINARIAN, MADISON, WIS.

Mr. President and Fellow Dairymen:

I think the subject I was to have is the "Diseases of Cattle" or the importance of healthy stock. Feeling that the stock owners of the United States will be interested at this time in the subject of tuberculosis in cattle it might be wise for me to take up that subject. I want to say that after I talk a short time on this subject I would be pleased to have the subject thoroughly discussed.

The Government has issued a report stating that tuberculosis is costing the United States something like $14,000,000 a year. They also state that 10 per cent of our dairy cattle are afflicted, 5 per cent of our beef cattle and 2 per cent of our hogs. If this be true it would look as if this $14,000,000 was worth looking into and saved if it is within our power to do it.

Tuberculosis is a contagious stable disease. It affects the glands of the body, but is liable to affect any part of it. Most people think it is a disease of the lungs only. There isn't a man living that is bright enough to pick the tuberculous cattle out of a herd. For that reason we must resort to the only test we know of now, known as the tuberculin test. I feel that there are a great many stock owners at the present time that are firm believers in this test and at the same time there are a great many that are not. If it is a proper thing to test our cattle we ought to do it. If not some one ought to show us why. If there were no state laws requiring the use of this test I feel it ought to be applied for your own personal benefit. If you had a herd of 50 cattle and you applied the test, finding four or five head afflicted, you can save the balance of the herd. If the state is to pay for these condemned cattle you save the state from paying for the balance of your cattle which are liable to become affected later.

This test is such a simple, easy test to apply that it would seem that most anyone would be able to apply it with perfect results, and when it is applied as it should be the results are absolutely reliable. In getting the herd ready to test it is wise to water them about noon and house them. Permit them to stand about three hours. At 3 o'clock you can take the temperature. The normal temperature varies from 96 to 103 degrees. No animal with a temperature higher than 103 should have tuberculin injected. You take three temperatures, the first being taken at 3 o'clock, then one at 5 and another at 7. After the 7 o'clock temperature you inject tuberculin by the use of the syringe, using 2 c. c. of tuberculin for the ordinary 1,000-pound cow. This syringe will hold doses. After the tuberculin is injected the herd should be watered, and then they should not be watered again until 2 o'clock the following day unless they can drink whenever they want to. The following morning at 6 o'clock you take temperatures, then again at 8, 10, 12 and 2, at which time the test is finished. After the test is finished, if there is an abnormal rising of temperature over the temperatures of the first day your herd should be divided into three classes—healthy, suspicious and condemned. A cow whose temperature raised over 103 or 104 may be considered suspicious. Over 104, up to 107.2 are usually reactors and tuberculous.

After the test is finished you should take a history of all the animals whose temperatures exceed 104. Kill these animals and you will find they are tuberculous. On the other hand if you kill the animals showing temperatures between 103 and 104 you are liable to kill animals that are not tuberculous. Instead of killing the suspicious animals turn them back into the herd and retest them. This can be done in six days.

Tuberculin should not be injected unless animals are in a normal condition. For instance it should not be injected into a cow that has recently aborted or recently been dehorned. If you do you are liable to get a reaction when the animal is not afflicted with tuberculosis.

If the stock raisers of the United States were not so frightened over tuberculosis it would be a good thing. I find stock men scared over tuberculosis. They worry day and night for months over their herds, thinking they were rotten with tuberculosis, but when the test was applied they found them perfectly free. They think when a herd is coughing that they were afflicted with tuberculosis. Cattle can have a cough pass through the entire herd without being afflicted with tuberculosis.

An animal may be in the last stages of tuberculosis and still not react. This gives those who do not believe an opportunity of not believing, but an animal that is so far afflicted as not to react is in such a condition that the ordinary person would readily know from their appearance that it was not a fit subject to be in the herd. You are amply protected in that way.

You can not start tuberculosis in a herd unless you introduce the germ. When you find tuberculosis in a herd take out the reactors. Test the balance in two months. If you find more take them out and do this until you wipe out the tuberculous ones. After this test every six months or at least once a year.

Perhaps instead of talking about tuberculosis it might be well to discuss this question. Let me add that if it is proper to wipe tuberculosis out of our cattle let us do it. I feel that the only way to wipe it out is to give to the people who own the cattle a little more information in regard to tuberculosis and this tuberculin test. I have heard people say that tuberculin has introduced tuberculosis into the herd. I tried a few years ago, testing some 500 or 600 head of cattle. Every one of these animals passed the test. When I was through I thought it strange that there were no reactors. I repeated the test with a different brand of tuberculin and found two carloads of reactors in the same herd. The first brand was unreliable, and I think that is where people get this idea that tuberculin introduces the disease into a herd. It is, therefore, important in applying the tuberculin test to obtain reliable tuberculin and use accurate thermometers, and no animal should be killed unless this test proves her to be a positive reactor.

Tuberculosis being largely a house or stable disease due to artificial life, such as being housed or stabled, every possible precaution should be taken to prevent disease. One tuberculous cow in a close, foul, hot, badly ventilated stable is liable to infect all other cattle in the barn. To prevent and guard against disease it is necessary to maintain absolute cleanliness.

DISCUSSION.

Member: I would like to ask the doctor if it is necessary to disinfect the barn after removing an afflicted animal.

Dr. Roberts Yes, it is necessary to thoroughly disinfect the entire barn.

Member: So many of our cattle are affected with lump jaw. Is that a symptom of tuberculosis?

Dr. Roberts: No, but they are more susceptible. I would advise anyone owning an animal with lump jaw to either kill it or treat it, because they will infect the others.

MEMBER: If an animal is afflicted in some other way and the tuberculin is injected, will they react whether they have tuberculosis or not?

Dr. Roberts: They are liable to. That is why it is very important to get the normal temperature of the animal before the tuberculin is injected.

Member: Last summer during the heated season we attempted to test six or seven head of cattle, but we found the temperatures were high. We tried again but still they were high and we had the same trouble. We were prevented from testing until fall. Was that caused by the weather?

Dr. Roberts: Were they well fed at the time? That would have a tendency to elevate the temperature. We gave a public demonstration in Wisconsin a few years ago and we showed something like three carloads. These animals were tested in August. We found tuberculosis in every one of those cattle that were killed, showing that the test can be applied in summer.

Member: How can you tell the difference between a good and a poor tuberculin?

Dr. Roberts: There is no way to tell. I simply said that to show how people get an idea that tuberculin produces tuberculosis. It does not happen very often. There is no way of knowing except that you apply the test to a herd of cattle when your judgment would lead you to believe that they were tuberculous.

Member: Would you think it advisable to test an animal when she was within three or four weeks of freshening?

Dr. Roberts: I have often tested cattle that calved during the night. I have very seldom found one to react. If they should I would not condemn her, but would consider her suspicious. This can be applied to any animal nearing the period of freshening.

Member: In your experience about what per cent of reacting animals were found to be without tuberculosis?

Dr. Roberts: I should say out of 100 there may be 5 per cent that you might not find lesions in. All our tuberculous cattle are killed under federal inspection. In one instance I applied the test to a herd and found one reactor. She was in good condition. Before she was killed I told the inspector to look her over carefully. If she had it I wanted to know where. He says I can't find a thing wrong with her. Just then he split the carcass from one end to the other. Right over the lungs in the spine was an abscess as large as a hen's egg. It involved the spinal cord. The owner said the only thing he found in this cow was that she had a stiff neck.

Member: I presume the summer months are the best months in which to make the test?

Dr. Roberts: No. The winter months are the best. When cattle are in their natural condition is the proper time to test. The winter months are the best, especially in the fall.

Member: Will a healthy cow be liable to get tuberculosis from other cattle by being in the same pasture?

Dr. Roberts: They are not very apt to, but I would not premit a healthy animal and an infected animal to be in the same pasture. There is danger in permitting both to run together.

When tuberculin first came out the directions stated that if the temperature raised one and a half degrees the second day over the temperature of the first day it would indicate tuberculosis. Later on the directions came out stating two degree raise. I believe that if an animal has tuberculosis its temperature will go up to 104 to 107.2. You really don't have to guess at it.

Hogs contract tuberculosis rapidly. Hogs and calves receiving milk from creameries where the milk has not been pasteurized contract the disease very rapidly.

Member: The question has been asked several times how early or how young an animal can be tested?

Dr. Roberts: You can test a calf at a month old. Three months is old enough to test calves.

Member: Is it not well to sound a warning not to sell reacting cattle to stock buyers? I have known where animals have been condemned and sold for $10 or $12 and passed by the federal inspector. There has been more or less graft and I do not believe there is any need of standing for it.

Dr. Roberts: I will say that I feel that a man owes it to his fellow men when he finds a tuberculous animal to kill it. Cattle have been tested, reacted and shipped to Chicago and sold for dairy cattle. They are shipped back and put in a clear herd and soon the whole herd would be rotten with tuberculosis. Wisconsin reimburses her farmers to the amount of four-fifths of the assessed value. I would not consider it wise for the Iowa farmer to wait until you pass a law. It is much better to prevent the disease than it is to be recompensed for condemned animals. Separate the infected cow from the herd and you can save the balance. I believe this question is holding back the live stock industry. I know lots of people who would go into the question of dairy-bred cattle if it were not for tuberculosis. I want to present both sides and let the stock owners decide what they want to do. I am a firm believer in the tuberculin test properly applied, and I know it is within our power to wipe tuberculosis out of our cattle and keep it out.

Member: Where I live in Western Iowa sometime during the early part of the fall there was 25 head of milk cows condemned and sent to Sioux City. Seven had tuberculosis and the rest were all right. That man received pay for the tuberculous cows. I do not think that is right.

Dr. Roberts: If a man has a bunch of cattle tested, ships ten to be slaughtered, five might pass inspection and sold for food while the other five might be tanked. They think the five that passed didn't have it. This is misleading. There should be a distinction. It is an unfair proposition to the people who handle these cows to say that five were all right and the other five infected with tuberculosis. The difference should be made clear. If an animal has no more than three lesions the inspector passes that animal for human food. The danger in using milk from tuberculous cows is because it is consumed in its raw condition, while the meat is cooked. I would not knowingly drink the milk nor eat the flesh of a tubercular cow. If we should label the milk coming from tubercular cows as such how much of it would we sell? If we should label the meat how much of that would we sell? I believe it ought to be so labeled —labeled just what it is.

President: We will now stand adjourned.

WEDNESDAY AFTERNOON 2 O'CLOCK.

President: We will open the afternoon session by an address by Dean Curtiss of the Iowa State College at Ames.

ADDRESS.

PROF. C. F. CURTISS, DEAN OF AGRICULTURE, IOWA STATE COLLEGE, AMES, IOWA.

Mr. Chairman, Ladies and Gentlemen:

I want to congratulate the Iowa State Dairy Association upon the favorable circumstances which attended the opening of this, your annual convention. I am especially pleased with some of the new features you have introduced. I think it is a good plan for dairymen when they come to a convention to bring the cows along. It is a good plan to keep close to the producer of the wealth that has made this great dairy industry, and some of you, I notice, have done better than that. You have brought your wives.

I noticed when I received the program that no subject had been assigned to me. I presume, therefore, I have a great deal of latitude in my remarks.

It is gratifying to see the wide-spread interest manifested in the dairy industry of the central west. The dairy cow is coming into prominence and a recognition that has never been known before in this western country. The progress has been alarming to some of the agricultural interests. At the Illinois State Fair the striking feature of the live stock exhibit was the dairy show and the striking weakness of that show was the beef cattle show. This situation, I think, is not alarming. No one need have any fear or need feel that the agricultural interests or any interests connected with the live stock interests will suffer by the advancement made by dairy stock. It is but natural and proper that recognition should be given to the dairy interests. No movement in recent years has been of greater interest looking to the conservation of our natural resources. The dairy cow is without doubt the most economical feed consumer and the most economical conserver of fertility of all the domestic animals we have. It is, therefore, highly important that we develop our agricultural interests along this line. We have been farming by pioneer methods in the central west. We have been leaving in the corn stalk and fodder in the field to a large extent the fruit of the crop that by actual nutritive value represents about one-third or a little over 37 per cent of the actual feeding value of the crop. That has largely gone to waste. No other business will stand so heavy a loss. The cow is a conserver of this product, and one of the strong features about dairying is that when the dairy cow comes into agricultural operations these products have been utilized.

Silos are coming into very general use, and I believe the time will come in the near future when the silo will be as common on the Iowa farm as the corn crib. Some improvements must come with it. Shortly we can haul it to the elevators and dispose of it as we now dispose of a large part of our corn crop. In connection with this there will be necessarily a larger consumption of the corn products and by-products that have heretofore been exported. That in itself is a feature of marked significance in the agricultural industry of the central west, and when this is done there will be a larger production per acre.

The original investment in lands is greater today than ever before. Labor and food stuffs are higher and instead of their being a cheapening we can look forward to a constant increase in the cost of production on the farm. There is no agency in connection with the agricultural industry of the middle west that will be of greater service in increasing the output than the dairy cow.

It has been a settled policy of the German government for a great many years to encourage the importation of raw material and the exportation of the finished product. They argue that there are two chief advantages in such a policy—they conserve their natural resources, and the manufacture of finished products calls for skilled labor, therefore bringing greater prosperity to their people.

It will be a fortunate day for the American farmer when we cease to export grain and by-products in the unfinished state, and that day will come, I believe, when at least we will export to a very much smaller degree than we have been exporting in the past. The changes taking place in western ariculture have made this imperative. Not long ago the lands lying to the west of us were devoted largely to cattle feeding. In the changes that have come about it has been found that it was not profitable to keep a cow the year round for the purpose of developing a beef steer. As the farmer began to take note of his operations he found he did not always get satisfactory returns from the feeding process, and as a result there has taken place the passing of the range country. Farmers have come in and taken possession of the range. The early settler, as a rule, is not a stock man. The supply of stock, therefore, has very largely diminished. While this has been going on our farmers have been cropping year after year. That process can go on for a time, but there must even be a change in that if the permanency of the investment is looked for.

It is very natural that in a plight of this kind the farmer has turned to the dairy cow, not only as a source of revenue but as a means of conserving the fertility of the soil.

It is contended by some that it is not necessary to maintain live stock to maintain soil fertility. However that may be and even if the scientists and the political economists can develop a system by which we may attain this end, it is certain that there is no system that has ever succeeded in maintaining a permanent and successful agriculture without resorting to live stock. So the dairy cow comes in to fill this place, and it is high time she has. She will make room for a larger output and more complete utilization of the products of the farm and a corresponding increase in other kinds of live stock.

There is a little town up here in Northeastern Iowa—up in a region where, in the early days, they raised nothing but wheat. They took to the dairy cow and dairying became prominent in that part of the state before it was taken up at all in any other section of the state. That little town prides itself today upon having about $3,000,000 of bank deposits. This shows what a wealth producer the soil of Iowa is if it is treated right and properly handled.

The situation in this state has won wide spread interest. Iowa has been looked upon as somewhat slow in progress along dairy lines. It is a state of diversified interests, and naturally our people have been slower than some other states to develop the dairy interests. But the things now in progress in the way of wide-spread interest and development of dairy stock is destined to be of far reaching effect. It is bound to put this state in the foremost rank, and I predict that the time will come when Iowa will not only stand abreast with other states in dairying but it is bound to forge ahead.

The dairy organization, the dairy work done by this association, its dairymen, its buttermakers, its dairy stock men and the manufacturers that has been prompted by our friend Marsh in developing a greater interest—all of this will tend to conspire to the one object, and the one result of advancing the dairying and the agricultural interests of this state beyond any point that has ever been dreamed of even by the most enthusiastic people. We have had what has been termed a grand revival. It has been a splendid thing to get men to studying the methods and processes of improving our corn crop and increasing the output. That is only the first step. It is one step to raise the grain production on our farms; it is another step to utilize it in such a way as to bring to the farmer the most profit.

If Iowa is to maintain her supremacy as an agricultural state it will be because of the fact, and it has been because of the fact that we have reached our present status that the state has been a live stock state—diversified agriculture instead of a state of grain output.

I think this one fact—the ability of the dairy cow to more completely utilize the waste products on the farm—should make the dairy industry of paramount importance, not only of this state but of the entire middle west. I thank you.

President: We have all been interested in this splendid address. when we asked the professor to make a talk we didn't think it was necessary for us to give him a subject. I am glad now we didn't because we couldn't have selected anything that would have done us as much good. We are unfortunate by not having Mr. Rawl with us. Mr. Quarton could not be here on account of a very important session of court. We will hear from Mr. Julian of Algona, at this time.

ADDRESS.

MR. JULIAN, ALGONA, IOWA.

Mr. Quarton has told me all he knows about dairying, but I will not attempt to take his place on the program. I only want to bring out a few things I think are of great importance to us, and one of them is the determined effort of the oleomargarine men to have a revision downward of the tax on that product, and if the dairymen don't stand together and urge our congressmen and senators from this state to uphold the present 10c law just as sure as I stand here we are going to see it lowered. I understand that a packing house at Sioux City has had the gall to see if it could not bring before this convention a resolution asking for a reduction of the oleo tax to 2c. If they would do such an absurd thing as that it is safe to say that they will do everything in their power in congress. Why don't they make and sell oleomargarine for what it is. I lived at Elgin a long time. You see a label of Elgin butter marked down to 25c. Do you suppose that is Elgin butter? It is simply oleomargarine. We have competition enough in poor goods, poor dairymen, uncleanliness, etc., without going in competition with this butter substitute. I want to say that we want to get after our congressmen for they are looking to the voter at home. If he gets a number of letters from various counties in his district he will do as you want him to . I know there is a determined effort in Washington to down this 10c tax on oleomargarine. It is a just tax. It was put on our statute books by a hard fight and all we have to do is to stand by the men who put the law in force to hold it there. Are we going to do it or sit still and let these packers go down there and wipe out this tax. The secretary of the treasury has advised this. His business is to carry out the law as he finds it on the statute books.

Another thing I wish to mention at this time is the silo. I believe the silo is the best thing on the farm, but the trouble is our farmers are scared at the cost of this silage. If they would make a comparison showing what it cost to raise a bushel of oats, taking all things into consideration, I think it would scare them too. The farmer of today must be a skilled workman. He must understand the raising of live stock and all other diversified farm operations.

Elgin and southern Wisconsin were at one time considered the only dairy districts, but I find that I can make just as fine butter in Iowa as can be made at Elgin. All it takes is the right kind of men and the right kind of soil, and Iowa is bountifully supplied with both. I thank you.

President: I see we are not lacking in material for our speeches. I was at Marshalltown about three weeks ago. Standing on the corner I saw what was one of the nicest loads of alfalfa hay ever put on the market. On the top of it was our friend Merit Green. He is here and will tell us something about how he raised that load of hay.

Mr. Green: I have been greatly interested in all I have heard. The gentleman just preceding me has a silo and I know he speaks from experience. I want to say just a word about the silo. It is a wonderful thing. It gives us that succulent feed through the winter and keeps up the flow of milk equal to grass. People in Iowa turn away from a silo by reason of cost. It is the best investment they could make, and making it a neighborhood affair is one way it can be worked out with the greatest economy. I have been a pioneer my whole life. I built the first silo in Marshall county. No one else would build one, but I have shown my neighbors the advantage of it. Last year 30 more were built in our county.

Along this line comes the question that our president mentioned —alfalfa. Silage alone will not answer the full purpose of feed for the dairy cow in the winter. They must have some roughage, usually stalks or clover hay. Then comes alfalfa as being the ideal hay to feed your cows with silage during the winter. Another advantage is feeding hogs. Nothing in the line of forage for hogs equals green alfalfa. It is worth as much to hogs as silage is to cows.

I have had good success in raising alfalfa. Anybody can raise it on most any soil and in any part of Iowa. I think the best method is to prepare the ground as early in August as possible. Drill in somewhere from 15 to 20 pounds of the best seed you can buy. Sow it along about the 15th of August. Ordinarily you should have four crops a year. I know you can raise it in Iowa as well as anywhere. I thank you.

Mr. Shilling: I was glad to hear Brother Julian deliver my speech. It wouldn't seem natural to stand before you and not talk about the oleo situation. As long as he opened the matter I feel like commenting a little upon it. The situation is just as serious as Mr. Julian told you. Probably the dairy interests never stood in as critical a position as they do at this time, but I want to say that I believe we are as well equipped to cope with it as we ever have been, The National Dairy Union is on a better basis and stronger today than we have ever been. The affairs are in the hands of a committee of five, the chairman of which is ex-Governor Hoard of Wisconsin. We are soon to meet and take the matter up with the members of the legislature. It was my privilege to go to Washington to confer with government officials about the oleo situation. Imagine my surprise when I found the bill drawn. Had it not been for the prompt and decisive action of one man at that time who went immediately to the president, we today would be under a law governing the sale of oleomargarine that would be dangerous to the dairy interests. The party that blocked the bill was James A. Tawny, of Minnesota. I will say that had this bill been offered—at a time when the treasury was in a depleted condition there is no question but what it would have passed immediately, but it was effectively blocked.

Mr. Julian urged the dairymen to stand together in this matter and I want to emphasize that statement. We must stand together. We are compiling a list of names of dairymen in every state in the union for this purpose of presenting a solid front when the time comes. If there are creamery secretaries here today who have not sent to our office a list of these names they should do so at once. We need them badly this coming winter. The situation is critical and it is going to be only by the most thorough efforts for us to maintain the position we now have.

I believe the grade of butter is on the upward trend. Everything points to that, and I don't think there is a man in any market but what will verify my statement. Quality is a great deal better than it has been during the past five years, and this fact is especially pleasing at this time. You must be aware of the fact that the poor butter turned out of the creameries is what has made the sale of oleo possible. The character of the product has opened the door for oleomargarine and has invited it in. Every time you work for the improvement of your product you are working better and harder than you could in any other way against the sale of oleo.

American people are human and are willing to do something if they get paid for it. I believe that under the system we have been running there has been a premium paid on a poor product. In Minnesota last week a creameryman said that in April this year he inaugurated a grading system in his creamery. He made his price the same as the centralizing creameries for the third grade of cream. For every pound of cream he received above this third grade he paid 2 cents extra, and for every pound of cream that graded first he paid 1 cent, making the price 3 cents. He said that under this system his business had doubled.

I believe we have to some time get to this basis. We never will produce the quality we should produce until we come to it.

I haven't had the opportunity of standing before the Iowa State Dairy Association since you received your appropriation. I want to congratulate you and compliment you. I thank you.

President: Is there any unfinished business?

Shoemaker: I wish to move that a committee consisting of W. W. Marsh, H. G. Van Pelt and J. J. Richardson be appointed to confer with the State Board of Agriculture at their meeting in Des Moines with reference to securing a superintendent of dairy cattle for the Iowa State Fair looking toward the improvements and enlargement of quarters for dairy cattle as well as increasing the premium fund.

(The motion was seconded by Julian and unanimously carried.)

Adjournment.

WEDNESDAY EVENING, 8 O'CLOCK.

President: For a number of years we, in Iowa, have been looking to Wisconsin for all that is good and high class in dairying. Probably no man in that state has done more to bring Wisconsin into prominence than ex-Governor Hoard. There is a little town up in the eastern part of the state where three men live who I believe, have done a great deal to bring Wisconsin into prominence as a dairy state. One is a breeder of Holstein-Friesian cattle, Mr. G——

Another is Mr. F. H. Scribner, a breeder of Jerseys. We have the third one with us tonight. Mr. Chas. L. Hill, of Rosendale, Wis., who will talk to you on the "True Measure of the Dairy Cow."

THE TRUE MEASURE OF A DAIRY COW.

CHAS. L. HILL, ROSENDALE, WIS.

Mr. Chairman and Gentlemen of the Convention:

By dairy cow I mean a cow whose owner breeds her for the profit she will produce in the dairy, and not the cow the owner keeps because of the fertility she may add to the farm; for the calf to which she may give birth that may make a good, bad, or indifferent steer; or for the cow that may produce $25.00 worth of beef at the end of her 10 or 15 years' existence.

We speak of cows as dairy cows, beef cows, or dual purpose cows, but the subject assigned for this paper confines us to the discussion of the dairy cow.

Even a dairy cow may be kept for varying purposes, such as breeding, sale of milk or cream in cities, or for the manufacture of cheese or butter and we must value them accordingly.

If a cow is wanted for the sale of milk where anything goes for quality, most men would think they could easily tell which were their best cows, but if they would weigh each individual cow's milk for a year, and note results they would find that possibly the cow they thought was their best cow on account of large flow at first will disappoint them, and some other cow which yielded but half or two-thirds as much per day, when fresh, will have far exceeded the other cow at the year's end.

The cow owner, who has by carefully weighing of the individual cow's milk determined the milk producing ability of his cows, has taken the first grade step in discovering the difference between good and indifferent dairy cows.

The opportunities, however, for the sale of milk, regardless of cost are very fast disappearing and some other test of a cow's dairy ability ought to be required. The test at Chicago and Buffalo expositions demonstrated that a cheese cow is not only a possibility but an assured fact A great impetus was given the cheese industry when the factories commenced to pay for the milk by a Babcock test, and now, that the recently invented Hart test has made it possible to rapidly determine the total solid in milk it is to be expected that an even more equitable system of paying for the milk for cheese making will be adopted.

The cow used for the production of commercial cream or butter will be valued in much the same way with the exception that more and more high class cream is being sold in the city for consumption on the table, and for this purpose color of the product makes all the difference in the world in its sale.

You perhaps noticed that I said a dairy cow might be kept for breeding, and by this I mean a grade dairy cow. While much is being said in the press from time to time of the value of the steer calf from the dual purpose cow, not nearly enough attention is paid to the real value of the heifer calf from the grade dairy cow, and this is bound to become an increasing profit from a good dairy herd, and the demand for grade cows of the strictly dairy breeds at this time far exceeds the supply, and is constantly growing.

Buyers of cows are scouring the East, Wisconsin, Illinois, and other sections of the country that are known as having good grade dairy cows and the prices paid vary from $50.00 to $110.00 each in car load lots. The grade heifer at six months to eighteen months old brings from $20.00 to $75.00 each, and with a less cost to raise, show as large or larger profit than the steer raised from a dual purpose cow.

There is one other value of a dairy cow to which I wish to call your attention on which I think much too little stress is laid and that is her ability to "stay on the job." In every cow herd the owner will point out, with pride, some cow, calling her perhaps "Old Nell" or "Bobtail," telling you that she is fourteen to twenty years old as the case may be, has produced a calf every year; required very little veterinary attention; and always fills the pail when called on.

This question of constitution, longevity, or whatever it may be, deserves our study and attention that we may produce cows that will not only perform well for a year or two, but will keep at it for a long term of years, and reproduces herself as well, in her daughters.

I have in mind one cow that produced a living calf and milked well at twenty-five years of age. I had on my own farm a cow that made 428 pounds of fat at fifteen years of age, while most cows would have, much earlier than that, been consigned to the junk shop.

Now for a little history of the attempts to measure the value of the production of a cow: Within my memory, the only answer you could get from anyone as to the value of any cow would be something like this. "She gives twenty quarts a day," "She fills a twelve quart pail morning and evening," or if the owner only owned one cow he might say, "We use all the milk and cream we want in a family of eight, have butter for our own table and supply butter to five or ten other families," this latter varying according to how big a liar the owner was.

I have been much amused on a recent trip to the Island of Guernsey in endeavoring to find out from the Islanders something about the production of their cows, and the reply always is, "Oh, she gives about eight pots a day," and after inquiring I find a "pot" is equal to about two and one-half quarts.

In those days practically no attention was paid to the persistency of a cow's milking and so actually, very little was known of the merits of cows. To show you how little idea even the owner had of the actual daily milk production of his own cows I might illustrate by this little incident:

Several years ago a Wisconsin farmer published some so-called records of his cows. He said, "I have been testing several of my cows for the past week. No. 1 averaged 75 pounds and milk testing 5.6 per cent; No. 2 (a two-year-old) averaged 48 pounds, milk testing 5.8 per cent; while No. 3 averaged 52 pounds, milk testing 5.2 per cent. (I have used numbers in the place of the names he gave for the cows.)

These yields were so phenomenal that, upon meeting this dairyman, I questioned him closely as to the way in which these tests were made. He finally admitted that he did not weigh the milk but said that No. 1, for instance, gave more milk than they could get into a sixteen quart pail, so he knew she gave as much as seventy-five pounds a day. When I questioned as to the test I found he had each cow's milk tested the fall previous at the creamery, and took it for granted that the cows would test the same the year through. These findings are about on a par with the results usually obtained in trying to find out something about the production of a cow.

The next step taken by the American dairyman to determine the value of his cow was the weekly tests and these continued to be made until finally it was announced that a cow had given 46 pounds and 12 ounces of butter in seven days, and that many cows had, in these weekly tests, made a pound of butter from less than six pounds of milk, and in one or two instances, from less than four pounds of milk.

The public, naturally, became incredulous, and demanded some more accurate information as to the production of cows.

With the invention of the Babcock test in 1890 it became possible to both accurately and easily determine the butter fat production of a cow. The Holstein breeders were the first to embrace the opportunity offered by the Agricultural Experiment Station to have their cows officially tested by representatives of the station, and thousands of such records have been made of pure bred dairy cows of all breeds.

These tests have proven that it is possible for a cow to give 28 pounds of butter fat in seven days, under right conditions. But the dairy public, backed up by the Experiment Station, demanded yearly tests in place of those of shorter duration and the American Guernsey Cattle Club were the first to inaugurate a system of yearly semi-official testing. By semi-official I mean that the Experiment Station made a test of a cow, at least, once each month during the year, and while the records published are not absolutely accurate, they are approximately correct.

The other breed association rapidly fell into line and now all of the registry associations of pure bred dairy cows are encouraging the making of these semi-official yearly tests. The results have far exceeded what was deemed possible ten years ago.

The largest record yet made is that of Colantha 4th Johanna that gave 998 pounds of fat in 365 days. This cow is Holstein and is owned by my neighbor, W. J. Gillett, of Rosendale, Wisconsin.

The largest record made by a Jersey cow is that held by Jacoba Irene, with a production of 952 pounds of fat a year, and what was more remarkable in her case, is the production of 2,331 pounds of fat in thirty-seven consecutive months.

The largest record made by any Guernsey cow is that Dollie Dimple that made 906 pounds of fat, commencing at three and a half years of age.

The best Ayrshire record is that of Rena Ross, 644 pounds of fat in a year.

With improved methods of feed and care records of 1,200 to 1,500 pounds seem to be within the possibilities. A valid objection that has been offered to these yearly records published has been the fact that the cows have been pushed to their limit of production for a single year; often not producing a calf for six months or a year after the test closed, and in some instances, never.

As one who helped to draw up the first set of rules for such yearly official tests, I plead guilty to not realizing the importance of incorporating some rule that would require the cow to produce a living calf within twelve or fifteen months of her previous calving.

A wonderful impetus will be given cow testing in Iowa by the contest now going on under the supervision of the Iowa Cow Culture Club. Mr. W. W. Marsh, of your state, who made it possible for you to have this cow contest in Iowa, has also given $1,000.00 to encourage a like contest in Wisconsin.

Those who have drawn up the rules for this Wisconsin contest have adopted rules much like those governing your Iowa contest, but we have added a rule that no cow can win a prize in the contest that does not become safely in calf within five months after previous calving. We hope to encourage, not only the testing of large numbers of puer bred cows, but also of many herds of grade cows.

Cow testing associations in large numbers have been formed in many of the states and in Canada and are wonderfully encouraging the average cow owners to try and find out which are his good and poor cows.

Of course, the true value of a cow lies even deeper than in just knowing what her production may be; for while one cow may return her owner one dollar and a quarter for each dollar's worth of feed given her, another one, while she may produce no more, may return to her owner a dollar and a half, or even more for the dollar invested in feed.

The Agricultural Experiment Station of the University of Illinois have recently published a circular numbered 134 well named "Cow Index of Keep and Profit," that shows the economic items of a dairy herd figured out and put into a system. In this bulletin Professor Fraser has figured out the yearly profit of cows giving anywhere from 2,000 to 15,000 pounds of milk per year, or anywhere from 80 to 600 pounds of fat.

He has taken into account the original value of the cow, which in the first instance he calls $30.00, and in the case of the best cow $140.00; taking also into account the value of the cow for beef at the end of her life, varying downward from $30.00 to $25.00; taking into account the value of the calf, the skim-milk, the manure, as well as of the butter fat and charged the cow not only with her feed and care, but also interest, depreciation in value, veterinary services, housing, and even such small items as the depreciation of dairy utensils, and his figures show a varying profit from minus $17.80, which means a loss of that amount, up to $127.98. I would certainly advise every person interested in measuring the value of his individual cows to give careful study to this bulletin.

The first great step with any dairyman in determining the value of his individual cows is taken when he begins to treat or deal with his herd as individuals, not as a whole. Then he will soon learn that he must needs own a scale and a milk record sheet; not only that, but a Babcock test as well, and not only that but that he must use his mind, his pad and his pencil to study the individual cow, her feed requirements, and any other characteristics.

In fact, be more interested in the cows in his dairy herd than he is in anything else, except his family and his religion.

President: Our next and last number for the evening will be an illustrated lecture by Prof. Hugh G. Van Pelt, State Dairy Expert. This, I believe, is the first opportunity we have had to use any of the fund directly from the state appropriation. This new lantern was bought with part of the money and I understand it is working fine.

ILLUSTRATED LECTURE.

PROF. HUGH G. VAN PELT, STATE DAIRY EXPERT, AMES, IOWA.

Ladies and Gentlemen and Fellow Dairymen:

It is a pleasure for me to be here tonight and to see not only so many buttermakers present but also to see that the dairy farmer or the man who owns the cows is also taking a great interest in this convention. I am sure that to accomplish the results which we are striving for; namely the betterment of dairy products and the increase of their production, necessitates a combination of the efforts of the dairy farmer and the buttermaker.

It is a known fact that Iowa produces a great amount of butter annually; in fact, her production is at the present time second only to Wisconsin and it would not be a very difficult matter with the number of cows that are being milked in this state to produce much more butter than we are and to exceed the butter production of Wisconsin, which is not vastly greater even at the present time. The most advisable way to bring these results about, in view of the fact that we are already milking over a million and a half cows, is to increase the average production of the cow that is now being milked. This should not be a difficult task as the average production at the present time is in the neighborhood of only 140 pounds of butter-fat per year. It is a known fact that over the state there are thousands of cows producing over 300 pounds of butter a year; hundreds of them, over 400 pounds; scores of them, over 500 pounds; dozens of them, over 600 pounds; and the recently inaugurated Cow Culture Club Contest, which was originated through the liberality of Mr. W. W. Marsh of Waterloo, has shown that there are several cows capable of producing from 60 to 95 pounds of butter per month. Taking these facts into consideration it is not difficult to realize that there must be a great number of cows producing less than 100 pounds of butter per year, considering the value of a pound of butter when marketed and also the present value of farm land and the high price of food stuffs, it is a known fact that we have a great many cows that do not make any profit whatever. It is apparent, then, that there are many farmers who are paying for the pleasure of milking their cows over 700 times each year.

Your attention has been called to the fact that dairy bred cows are very high priced and very few in numbers. The truth of this statement is best exemplified by the fact that were all the poor cows that are now being milked in this state to be disposed of, it would be practically impossible and at least unreasonable to think of buying high bred productive cows to fill their places at any reasonable cost.

Recently in Des Moines there was a Guernsey sale at which 75 head of high grade cows, calves and heifers were sold for an average price of $107.50. Four cows came into the ring at one time and the auctioneer offered the buyers an opportunity to choose one or take them all. As a result the highest priced one of these four cows brought $170.00; the lowest priced one, $160.00. They were not pure bred recorded cows but simply four good cows bred and raised along dairy lines. The average price of the four was $165.00. These results were accomplished by the building up of a dairy herd by the use of good dairy bred sires, by the selection of good cows and the elimination from the herd of the poor ones.

I am sure the question which presents itself at this time is the one of improving our herds of milk cows. To do this it will be necessary to use a different class of sires from those which have been used in the past. In the selection of sires for the purpose of reproducing productive offspring the records of the dam, granddams and the great granddams in the pedigree back for at least six generations should be duly considered. It is not reasonable to believe that the offspring of a sire whose maternal ancestors have been meagre producers will ever yield a sufficient amount of milk and butter-fat to be extremely profitable.

In selecting cows to build up the dairy herd it is necessary to depend largely upon their breeding and individuality. After they have entered the herd the advisable course is to weigh and test their milk periodically throughout the year and thus determine accurately whether or not each cow is making a profit or a loss. By retaining only the profitable cows in the herd and by the selection of sires, giving due consideration to their breeding and individuality, it is possible to so conduct operations that within a few years our herds will be vastly superior to what they are at the present time.

There is one point that should be borne in mind by every dairyman and farmer who milks cows. If the sires which he selects are of such a character that each generation the resulting daughters are superior in the least degree to their mothers, then the efforts from the standpoint of the breeder are an absolute success and it is only a course of time until the cows in the herd resulting from such breeding will be extremely productive. On the other hand, whenever a sire is selected whose resulting daughters under the same conditions are in the least degree poorer than their mothers were at the same age, then the efforts of the farmer or dairyman from the standpoint of the breeder are an absolute failure and he accomplishes nothing during his entire lifetime by such methods.

I remember talking with Mr. Gillett, the man who bred, raised and developed Colantha 4th's Johanna. He told me that he found the daughters of one young bull that he used in his herd produced no more milk than their mothers did and the test of their milk was one-tenth of one per cent less. That is keeping pretty close account of what the herd is doing but it is the only method of conducting the dairy business on our farms so that any progress can be accomplished.

In the selection and breeding of animals there should be some such definite policy so there would be a certainty of building up the herd rather than going backward, as is the case in so many instances. The very fact that Mr. Gillett knew that the daughters of this young bull were producing milk testing one-tenth of one per cent less enabled him to exchange him for another sire having the ability of producing daughters that would not only produce an amount of milk equally as great as their mothers, but which would also test as rich or richer.

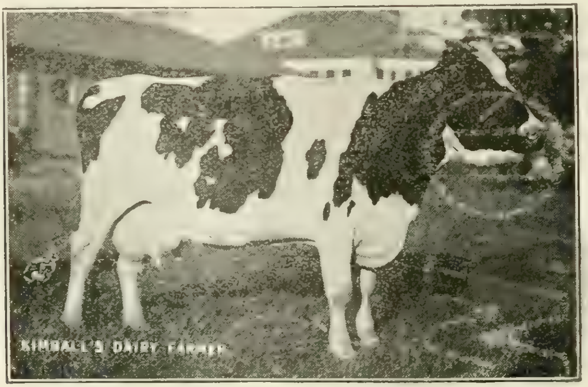
If you stop to realize, you will agree with me that on the average farm of today we are milking cows that are no better than the cows we milked 16 years ago. I know that the cows being milked 16 years ago were just as good as, and in many instances far better than the average cow we are milking at this time. We have on our farms better horses, better hogs, better beef cattle and we use corn harvesters instead of demonstrates the fact that although we are the most progressive people in the world in practically all of our farming operations, we have been corn knives, and grain harvesters instead of sickles or cradles. This allowing the dairy cow to remain a side issue and have made very little if any improvement in her production.

The time is rapidly coming, however, when we will realize the true value of the dairy cow. We are coming to know that if we are to retain and build up the fertility of our farms we must use more stock, and it is a known fact that the dairy cow retains the fertility to a greater extent than any other class of live stock, and in addition to this she is the most profitable of farm animals.

It is very interesting to note how rapidly a good dairy herd can be built upon any of our Iowa farms by the use of good sires and careful methods of raising the resulting offspring from year to year. By starting with one cow and saving all the female offspring for 21 years, allowing that 50 per cent of the offspring are males and also allowing a 10 per cent death loss in the herd and among the calves, a herd numbering 2,000 head will be the result. The character of this herd will depend entirely upon the character of the cow used as a foundation, upon the character and breeding of the sires used and the carefulness with which the calves have been raised and brought into milk.

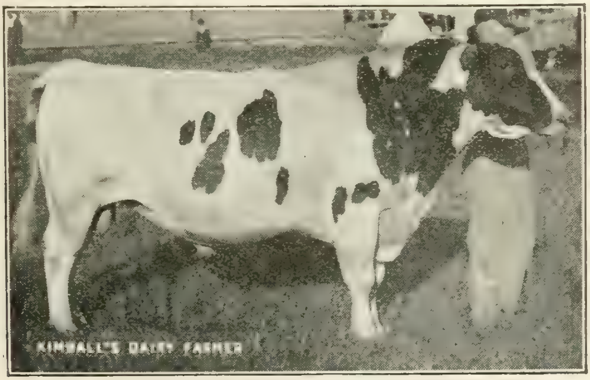
We are starting associations in different parts of Iowa. The object of these associations will be to test herds and determine the profitable and the unprofitable cows. It will enable the farmers who are members to eliminate from their herds the poor cows and fill their places with good ones. Likely a future consideration will be to add community breeding as one of the efforts of these associations. Considering that there are 26 farmers in this association owning 400 cows and that they would select from four to six pure bred dairy bulls and use them for ten years, it is wonderful to note the great number of high bred dairy cattle that will be the result at the end of that time. There would be in that vicinity, providing none of the females were sold and 50 per cent of the calves of the resulting offspring were females, over 3,500 females ranging from one to eight years of age and in blood lines from half-bloods to those thirty-one thirty-seconds pure bred. These animals would be good or poor according not only to the manner in which they had been raised and cared for, but even to a larger degree according to the character of the sires that had been used as progenitors.

There are a great many points to be considered in the selection of dairy animals and especially the sires that are to be used. It has been found that function follows form. Practically all animals that have produced largely, economically and profitably have been of a given form and conformation. We have, therefore, learned to select animals of this given form and conformation for the purpose of economical and profitable milk and butter-fat production. There still remains, however, those who select animals according to price rather than according to their breeding and individuality. It is characteristic of some of the extremely wealthy breeders to buy sires that cost several thousands of dollars and select them mainly because of this fact. On the other hand, there is a class of buyers found upon our average farms who will purchase no sires except those that can be bought for from $50.00 to $100.00. There is still another class of breeders and dairymen between these two who are successful developers of good cattle and they first determine in their own minds the character of a sire that should be used upon their herds for the reproduction of the very best producing daughters and then set out to find exactly this kind of a sire. When he has been found then it is only a business consideration to buy him as cheaply as possible. The following illustrations of some of the greatest prize winners in the American Show Yards as well as some of the greatest producers of milk and butter-fat will demonstrate those points which should be considered in the selection of cows for milk and butter-fat production and of sires for the reproduction of such cows:



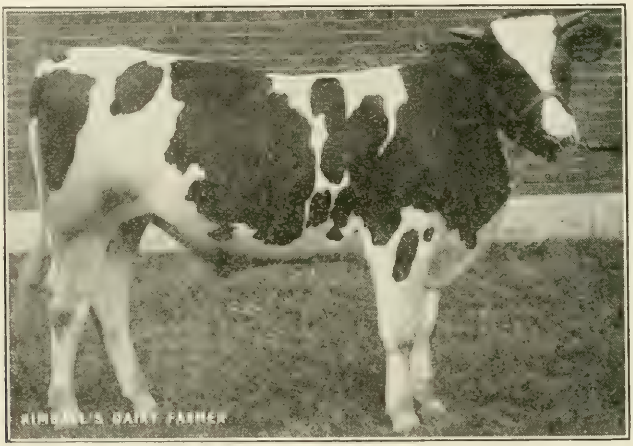
No. 1. Parthenia Hengerveld.

The first illustration is Parthenea Hengerveld, a Holstein cow that has probably won more first and championship prizes than any other Holstein cow now living. She is owned by Hon. W. B. Barney of Hampton, Iowa, president of the State Dairymen's Association. She was first prize and champion Holstein cow at the Iowa and Wisconsin state fairs this year, as well as at the National Dairy Show. The points that are particularly strong about this cow are those which demonstrate her great constitution, capacity and producing ability. These points are indicated by the large, open nostril, bright eye, deep heart girth and chest, well sprung rib, a deep and long body and large udder development and prominent mammary veins. There was a time when cows were selected largely upon the size and character of the escutcheon. This was probably due to the fact that the escutheon indicated the amount of blood that passed into the udder from the digestive system, carrying with it those nutrients which were later to be made into milk. Likewise the mammary vein which is to be seen passing forward from the udder of Parthenea Hengerveld, along the abdomen and entering the body through a milk well is an indication of the blood which has been through the udder, freed from its nutrients and is passing back to the heart and lungs for purification and to again be passed back to the digestive apparatus to be ladened with milk making nutrients and sent again on its trip. These mammary veins are all important for this reason and, as a rule, they are never found so large and well extended as in this instance on any except great producing cows, and it is very seldom that an extremely great producing cow is found that does not have large mammary veins. All cows have one of these veins on each side of the body. Some cows have three of these veins, one on each side of the body and one passing forward from the udder between the two outside veins. This is called a center extension. In addition to a single vein passing forward to the first milk well oftentimes these veins are carried forward to a second or third and often branched to a fourth or a fifth milk well on one or both sides. The more tortuous these veins and the more numerous the milk wells, and the larger they are, the greater the amount of blood which has evidently passed through the udder carrying with it the milk making nutrients.



No. 2 Dijkestra Beauty Lad.

The second illustration is Dijkestra Beauty Lad, the show bull owned by Mr. W. B. Barney that won first and championship prize at the Iowa and Wisconsin state fairs this year and at the National Dairy Show at Milwaukee. Those characteristics which are plainly seen in the likeness of this famous show until show bull are desired for the main part in productive dairy cows. The nervous temperament as is indicated by the prominence of the eye, the length from the eye to the nose and the freedom from beefiness throughout the entire body; a strong constitution; a great capacity and producing ability as is indicated by the shallow flank and the long well developed mammary veins on each side of the abdomen are all points desired in the female offspring.



NO. 3. **Buffalo Skylark Ames.**

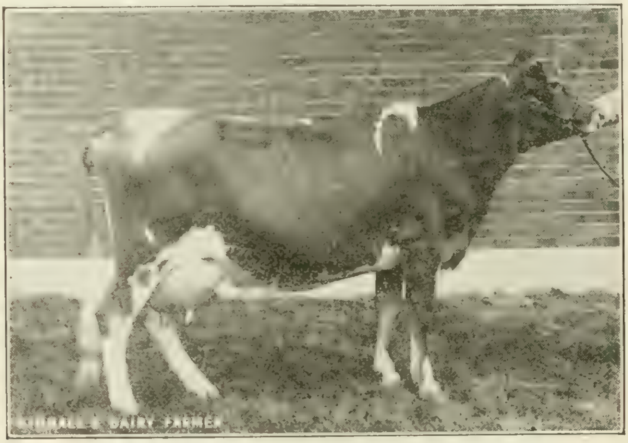
The next illustration is that of Buffalo Skylark Ames, the first prize bull calf and Junior Champion at the Fourth National Dairy Show held this year at Milwaukee. This calf was bred, owned and exhibited by Mr. R. B. Young of Buffalo Center, Iowa. The same general points of form and conformation will be seen in this youngster as those of Dijkestra Beauty Lad; the breadth between the eyes is especially noticeable, as well as the length from the eye to the nose and the depth of body, together with the length from the shoulder to the hip bone, indicating sufficient feeding capacity to warrant large production. The length from the hip bone back to the pin bone is a point worthy of due consideration in view of the fact that a line dropped immediately in front of the hips of a fresh cow drops immediately in front of the udder, and a line dropped from the pin bone drops immediately behind the udder. If the distance from the hip bone to the pin bone is short the length of the udder will consequently be short, while on the other hand, if there is great length from the hip bone to the pin bone as in this instance, it gives indication of great length of udder development, high attachment behind and an udder that is extended well forward are the points which lend materially to udder capacity. Not only the excel-

KIMBALL'S DAIRY FARMER

No. 4. Champion Holstein Herd at Iowa, Wisconsin and Illinois State Fairs and National Dairy Show.

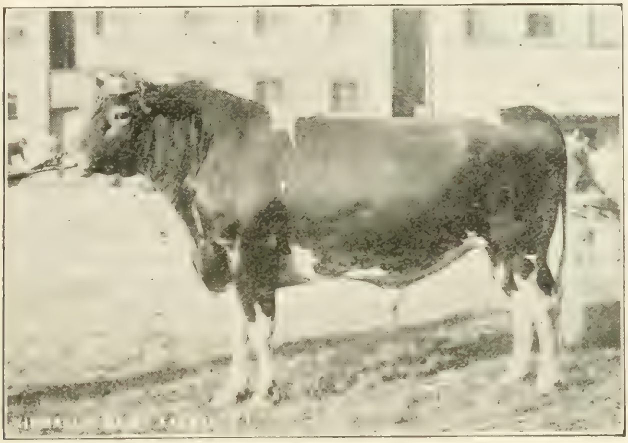
lent individuality of this young bull commends him but also the fact that his mother last year produced over 500 pounds of butter-fat, which would make nearly 600 pounds of butter in 365 days. By the use of sires of such individuality as this young bull, having such an excellent and productive mother, as well as other commendable maternal ancestry, great improvement upon the herds of cows that are now being milked in the state will result.

The next illustration shows Dijkestra Beauty Lad, Parthenea Hengerveld and the other three members of the first prize and championship Holstein herd at the Iowa, Wisconsin and Illinois state fairs of 1909, as well as at the Fourth National Dairy Show. The principal feature of this view is the uniformity of these animals which shows not only the color markings of the Holstein breed but also the general type, form and conformation of the animals of different ages which are commendable from the standpoint of dairy cattle breeding.



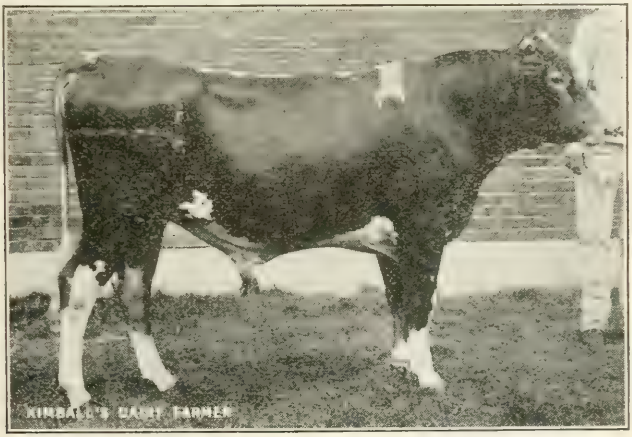
No. 5. Victoria. First Prize and Champion Guernsey Cow at National Dairy Show.

The Guernsey cow, Victoria, owned by Fred Bogel, Jr., of Wisconsin, was the champion cow of her breed at the Fourth National Dairy Show. Although she is of a different breed, which originates on the Guernsey Isles instead of in Holland as do the Holsteins, it will be noticed that with the exception of size and color the same characteristics of form and conformation are to be found in this cow that were found in the Holstein. The same length from the eye to the nose, indicating a lack of beef making tendencies, the same large, bright, prominent eye indicating the right kind of a nervous temperament, the long neck contrary to the short, chuffy neck of the beef animal, clean cut, charp withers, a deep chest and heart girth indicating constitution, a long barrel from the shoulders to the hip bones and a well sprung rib indicating great capacity. The length from the hip bone to the pin bone, the clean-cut face free from beefiness, a large udder and mammary veins all point towards great and profitable milk and butter-fat production. So truly is it a known fact that a certain form is conducive to large production that most of the dairy breeds at the present time conform largely to this general type regardless of the breed characteristics.



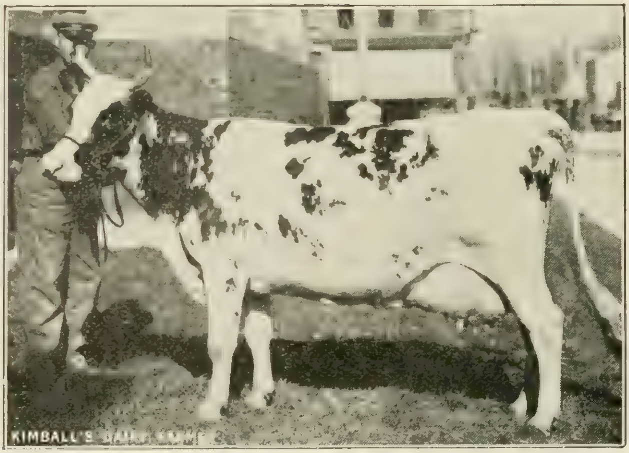
No. 6. Lord Mar. Champion Guernsey Bull of the World.

Lord Mar is probably one of the greatest individuals belonging to the Guernsey breed that has ever been brought to America from the Guernsey Isles. He was imported this year and exhibited by Mr. W. W. Marsh and was champion Guernsey bull at the Iowa State Fair, also at the National Dairy Show at Milwaukee, as well as one of the greatest winners in the Guernsey Isles show ring. He has been attributed the honor of being the champion Guernsey bull of the world and especially is he to be commended upon certain characteristics; namely, his great size, constitution, capacity and dairy temperament, which are indicated by those points which demonstrate large heart room, breathing space and digestive room.



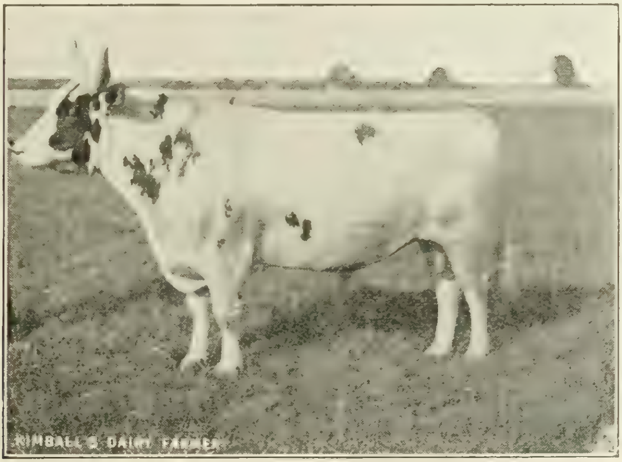
No. 7. Hero of Court Le Blicq, Jr.
Champion Bull at Iowa State Fair and National Dairy Show.

The strongest competitor he has ever had for his show yard honors is his son, Hero of Court Le Blicq, which bull was Junior champion at the Iowa State Fair and the recent National Dairy Show. Although he is under two years old he shows good size for the Guernsey breed and by the length of face and freedom from beefiness, chuffiness of the neck indicates a lack of beefy qualities. The clean-cutness of the withers and his angular, wedge-shape throughout shows him to be of the strictly dairy type. He has plenty of depth in the chest and heart girth to insure constitution; he is very long from the shoulders to the hip bone and very deep of body, giving plenty of room for great development of the digestive apparatus, and especially is he excellent in length from the hip bones to the pin bones and free from all beefy qualities in the thighs, and cuts up well in the flank. By imparting these characteristics to his daughters it is reasonable to believe that they will be of the character necessary for hard workers with constitution sufficiently great to sustain their work, with capacity that may be developed so they can handle great amounts of feed and with the other dairy qualifications they should have the ability to convert the nutrients from the feed carried to the udder by the mammary veins, which are already apparent on the underline of this young bull, into milk and butter-fat largely and profitably.



No. 8. Boghall Snowdrop. First Prize and Champion Ayrshire Cow at National Dairy Show.

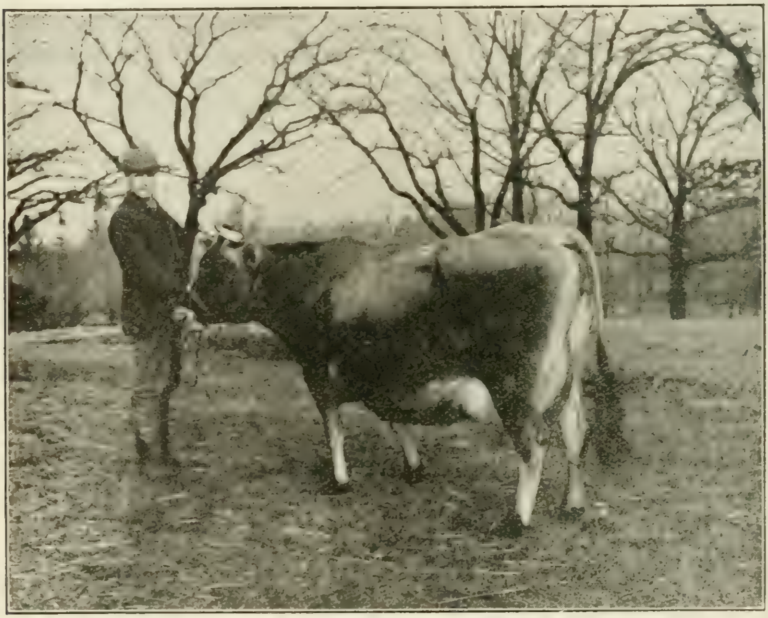
The Ayrshire breed of cattle originated and has been developed in the County of Ayr in Scotland. There are many features which recommend the Ayrshires to dairymen all over the world. As a breed they probably adhere more closely to the score card for dairy cattle than any other breed. The first will be noticed in the illustration of Boghall Snowdrop, owned by J. F. Converse & Co. This cow was the first prize and grand champion Ayrshire cow at the 1909 National Dairy Show. From the end of her nose to the tip of her tail the dairy points that should be considered in selecting and breeding cows for milk production are prominent. The large mouth indicates good feeding qualities; the large, distended nostrils, constitution; the clean-cut, long face from the eye to the nose indicates a lack of beef making qualities; the broad-dished face between the two large, prominent eyes indicate not only nervous temperament but plenty of brain capacity, which is as necessary in the dairy cow as any other animal. The long, clean-cut neck free from beefiness again shows a lack of beef making qualities and the clean-cut withers, open-jointed back and freedom from fleshy covering over the entire body again indicates a well developed nervous temperament. The depth of chest and heart girth gives room for plenty of constitution and the extreme length and depth of body assures feeding capacity. The clean-cut thigh and the freedom from fat in this region of the body gives sufficient room for a large, well developed udder which is present and through which the blood flows in large amounts, carrying with it those nutrients which have been taken from the feed as is indicated by the long, tortuous mammary veins. Cows of this character are produced by careful breeding and feeding and are the result of good sires such as is Howie's Fizzaway, also owned by J. F. Converse & Co. the Ayrshire bull that was grand champion of this breed at this year's National Dairy Show. Although he shows a trifle more of the beef making qualities than does Dijkestra Beauty Lad or Lord Mar, still the clean-cutness of his features, the manner in which he cuts up in the flank, the deep body, heart girth and chest as well as the length of neck and length from the hip bone to the pin bone, assures his value as a progenitor of great producing daughters. From a strictly dairy standpoint his individuality would be criticized by a lacking in length from the eye to the nose, a rather dull expression of the eye, beefiness of the hind quarters and rather too much fat over the entire body. It will be



No. 9. Howie's Fizzaway. First Prize and Champion Ayrshire Bull at National Dairy Show, 1909.

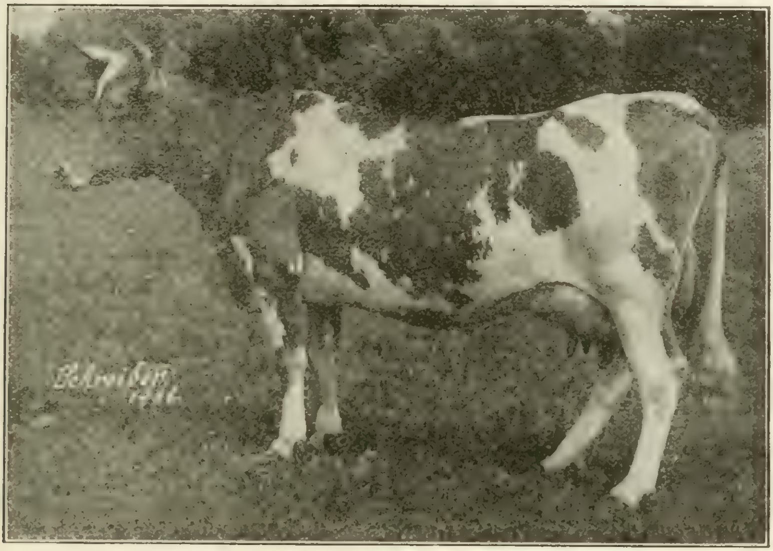
noticed that the horns of both this animal and the Ayrshire cow, Boghall Snowdrop, turn directly backward. This is a characteristic of the breed as well as the red and white color and for the show animals, if the horns are inclined to grow in any other direction, they are trained upward in order that the breed characteristics may be present in the individuals to aid them in their show yard career.

The views shown thus far are those of prize winners in the show ring regardless to a certain extent of the milk and butter-fat which they produce. It is a fact, however, that although a considerable amount of consideration is given to beauty and the finer points of dairy cattle by show ring judges, still the characteristics which indicate production must nevertheless be present in order for the animal to win successfully. This is shown by the view of Loretta D., the cow that won the grand championship honors at the St. Louis Exposition in the dairy cow demonstration. In 120 days she produced a trifle over 330 pounds of butter. In order to accomplish such work under the confining conditions to which she was subjected on the fair ground she must necessarily have had a great constitution as is indicated by the points spoken of before, and in order to handle the feed necessary to make this vast amount of butter-fat she must have had great capacity, which is assured by her long and especially deep body and breadth given by her great spring of rib. The long distance from the hip bone to the pin bone is correlated by the length of the udder and the proper attachment as shown in this picture,



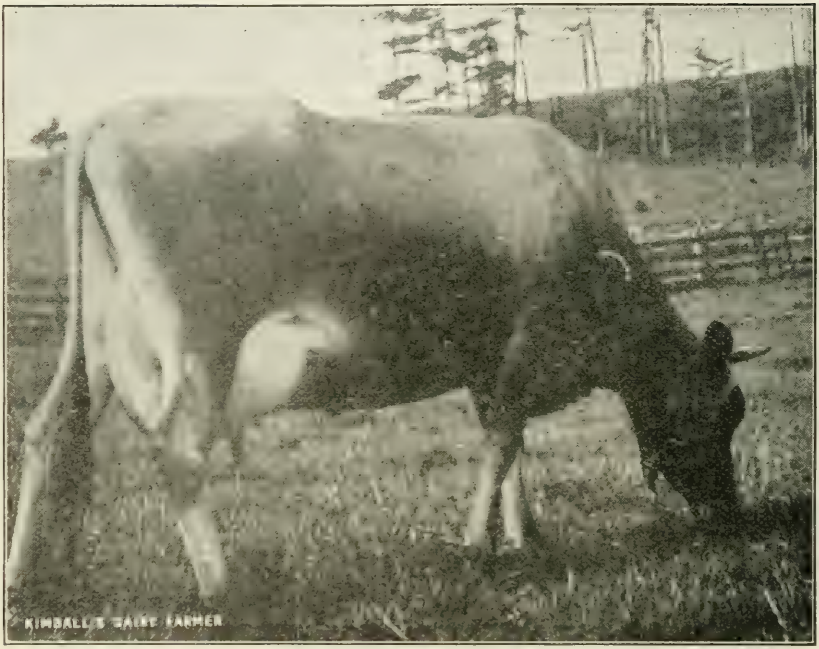
No. 10. Loretta D. Champion Butter Cow at St. Louis World's Fair.
330.03 pounds butter in 120 days.

by the udder hanging well up behind and also the manner in which the udder of Loretta D. extends forward. The breadth of it and the depth is an indication of the proper type and form of udder development that should be secured in breeding dairy cattle.



No. 11. Dolly Dimple. Guernsey Cow with record of 18458.8 pounds milk and 906.89 pounds butter fat in one year.

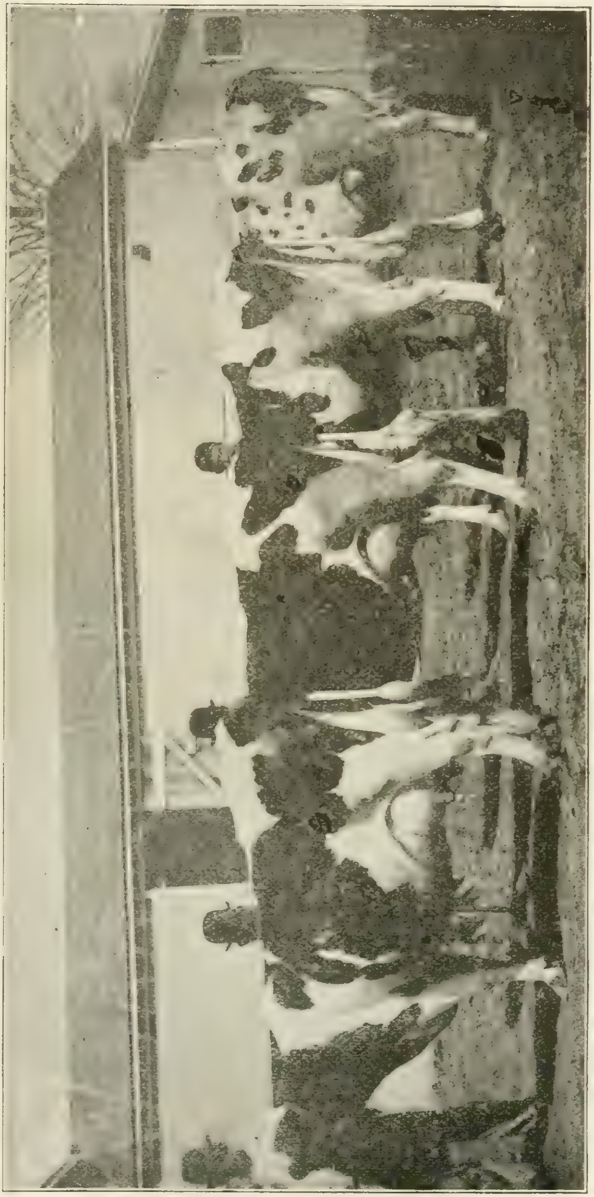
The same form and conformation is to be found in the picture of Dolly Dimple, the Guernsey cow which produced in one year 906.89 pounds of butter-fat. More than any of the other views have indicated, Dolly Dimple presents the long, clean-cut face, the long neck free from fleshiness, the well sprung and deep rib showing constitution and capacity, the freedom from beefiness in the hind quarters, the high attachment of the udder behind as well as the extension forward, and especially the large and tortuous mammary veins. Again the fact is brought to mind that whether the cow be a Holstein, Guernsey, Ayrshire or Jersey, if she be a great producer of milk and butter-fat the same general type and conformation is present. True it is that certain minor points, such as color markings and size differ with the different individuals and the different breeds, still they make little difference when the real reason for keeping the cow—that of profitable production—is considered.



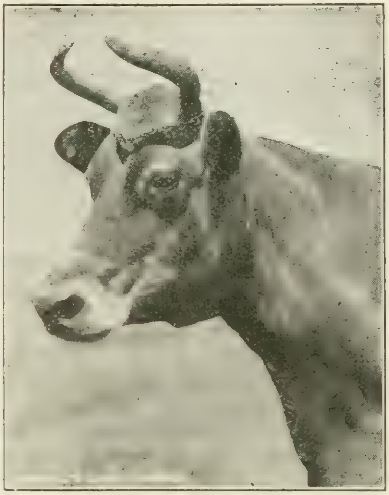
No. 12. Hector's Fairy Belle.

Hector's Fairy Belle, a Jersey cow that produced in eleven months 681 pounds, 1½ ounces of butter, illustrates more clearly than the other views the proper udder development. In order to insure great production the cow must have a large udder. In order for the udder to be large and capacious it must be attached high behind and it must extend far forward. It must be broad and to a certain extent deep and not pendulant. Pendulant udders, or those whch are narrow and do not hang well up to the body line, are very troublesome in that they are more susceptible to infections and to such diseases as garget, mammitis and other diseases.

The uniformity of udder development, placement of teats, constitution and dairy type and conformation are indicated in this view of the four Holstein cows. Especially prominent in each individual in this picture is the great length from the hip bone to the pin bone, the straightness of the tail head, the freedom from beefiness in the hind quarters, the incurving thighs, the width, depth and length of udder development. The production of a dairy composed of four cows such as these would be equal in butter production to the average Iowa dairy herd consisting of ten cows.

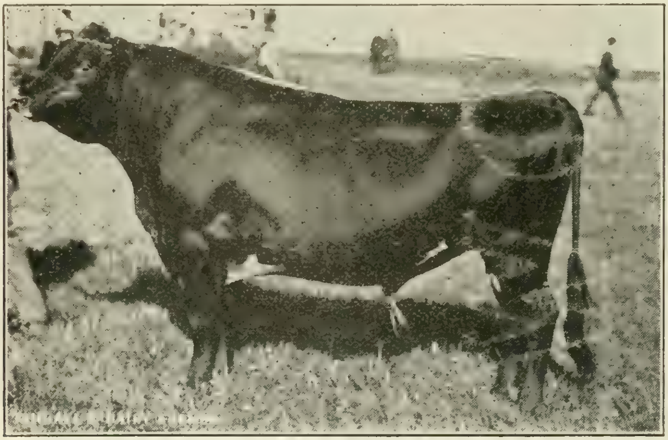


No. 13. **Priely and her** Three Daughters—Moyerdale Farm.



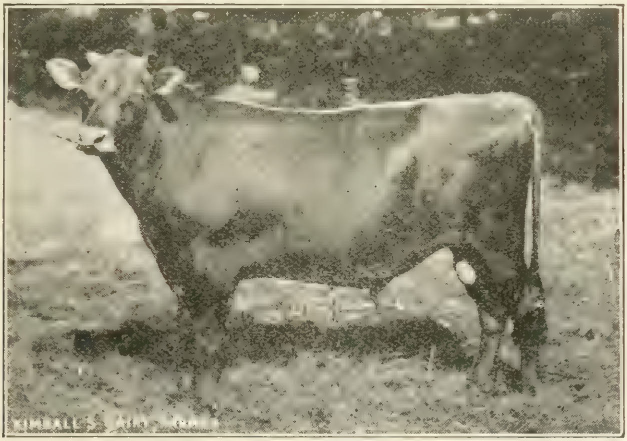
No. 14. Jacoba Irene.
Champion Long Distance Cow of the World.

As a rule much can be determined relative to the character of the dairy animal by the head and neck. This is as true in breeding dairy cattle as it is in breeding all beef animals or those for any other purpose. This view represents the head of Jacoba Irene, the champion long distance cow of the world. In one year she produced over 952 pounds of butter-fat and during the three years that she was under authenticated supervision she produced over 2,700 pounds of butter. Characteristic of our best dairy cows it will be noticed that Jacoba Irene, the champion long distance cow of the world, has an extremely large mouth, indicative of good feeding capacity, large and well distended nos-



No 15. Beauvoir's King. Jersey Bull Imported from Jersey Isles
and Champion Bull at Illinois State Fair, 1909.

trils indicative of constitution, a face that is long from the eye to the nose, showing a freedom from beef making instincts, also broad and well dished between two large, bright, prominent and placid eyes which point shows strong, nervous temperament and that she will be a hard worker, going to the pasture in the morning and working hard all day, returning with a large udder full of milk which her owner can take and send her back to pasture where she will repeat the same performance day after day and night after night throughout the whole year. Freedom from chuffiness in the neck is another indication of a lack of beef making qualities and an indication of profitable milk and butter-fat production. Such cows as Jacoba Irene, Loretta D., Dollie Dimple and other great producers are the result of the use of such sires as Beauvoir's King, the bull which after being imported from the Jersey Isles this year won the championship prize at the Illnois State Fair and the first prize in his class at the National Dairy Show. The same points and characteristics with the exception of udder development and feminine qualificatons which have been noticed in the other views are clearly demonstrated in the picture of this most excellent individual, especially the bright, prominent eye, the long face and neck, the clean-cut withers, the long, deep, broad body, the freedom from beefiness throughout and especially in the hind quarters, the straightness of tail head and the length from the hip bone to the pin bone.



No. 16. Derry's Jolly Lad, Jr. Champion and Grand Champion Jersey Bull at National Dairy Show. 1909.

His greatest competitor was the two-year-old bull, Derry's Jolly Lad, owned by J. F. Boyd. He was the Junior champion Jersey bull at the National Dairy Show and defeated for grand championship Beauvoir's King. With the exception of age these two animals are very similar; Beauvoir's King showing a trifle more length of body, a little more finish at the tail head but lacking somewhat in depth of body as compared to Derry's Golden Jolly. If, however, individuality determines the character of the resulting daughters of sires, either of these bulls should be especially valuable in the building up of the dairy herds where their daughters are carefully raised, developed and brought into milk.

The statement is often made that it is impossible to determine through the individuality of dairy sires the character of their offspring and, therefore, that show yard honors count for very little in the developing of dairying cattle. At the same time if the breeding of these animals which have been shown this evening were looked into it would be found that lying back of them are blood lines that have produced great and productive cows. As a rule, in order to produce animals the individuality of which is as near perfect as these animals and the animals which generally win in the present day show yard, it is necessary to use those animals that are strong enough in dairy breeding to insure offspring that will as surely be productive as they are endowed with points of dairy individuality.

THURSDAY MORNING, 10:25.

President: The first thing this morning is the election of officers. Nominations for president are in order.

Wright: I would like to make a speech, but I guess about everybody knows what I want to say. I don't believe that this is a time to change the officers, and I, therefore, nominate Mr. Barney for reelection.

Mr. Barney's nomination was unanimous, and by a motion to deviate the rules and vote by acclamation, his election was unanimous.

Mr. Barney: I don't know that I can make a speech, but I want to say that I heartily appreciate the honor. I shall be glad to serve you for another year and will do it to the very best of my ability. I thank you.

Mr. Trimble: Mr. Chairman, I want to place the name of a man for vice-president—a man who is one of the old stand-bys—one of the old buttermakers and one of the best buttermakers—F. W. Stephenson.

(The rules were suspended and Mr. Stephenson's election was made unanimous.)

Mr. Stephenson: This comes like a thunderbolt to me because I hadn't thought of any such thing. I am interested in the butter business; I am interested in the creamery business, and I am also interested in the life of the Iowa State Dairy Association. I thank you heartily for the honor that you have conferred upon me, and if I know myself this morning I will not leave a straw unturned to benefit the association.

President: The next is your secretary. Who do you want for your secretary.

Mr. Stephenson: I have in mind a gentleman who is thoroughly conversant with the dairy business from every standpoint. A man who is a buttermaker, who understands the butter business thoroughly, and who has for the last two or three years acted as secretary of this association. He has given his best thought and attention to association interests, and I know of no man who is any better able to conduct our affairs than W. B. Johnson.

(The rules were suspended and Mr. Johnson was unanimously elected.)

Mr. Johnson: I am highly sensitive of the honor you have conferred upon me, fellows, and I promise to do my best to serve you and make this association a success so far as it is within my power. With your co-operation I am certain that our next meeting will be a success as it has been in the past. I thank you.

President: The next in order will be nominations for treasurer.

Mr. Shoemaker: I wish to name a man whom we all know and whose work needs no recommendation—Mr. F. L. Odell.

(The rules were suspended and Mr. Odell was elected unanimously.)

Mr. Odell: All I can say to you is that I thank you heartily for this honor, and, like the other officers I will leave no stone unturned to make the association a success. I thank you.

President: The next on our program is an address by Prof. Mortensen, of the Iowa State College at Ames. Mr. Mortenson:

ADDRESS.

PROF. MORTENSON, IOWA STATE COLLEGE, AMES, IOWA.

Mr. Chairman and Gentlemen of the Convention:

There are two problems confronting our creamerymen today. The problem of making our business a financial success and that of making improvement in the quality of our product. Some years ago it was required that a buttermaker was able to make fancy butter and yet have a satisfactory overrun. Today there is something more required, as nearly everyone making butter at the present day is familiar with the mechanical processes of manufacturing. A good buttermaker of today must also be a business manager. He must have an eye keen enough for business so he will be able to make his profit from sources which had never been considered by our old time makers.

We are usually too apt to confine our energy in the creamery exclusively to butter manufacturing. It is true that this is the most important line of our work but it is equally true that it is not necessarily the most profitable part of our business. How much buttermilk and skimmed milk are we not wasting daily at our creameries? Buttermilk and skimmed milk if fed to hogs are worth in the neighborhood of 20c per 100 pounds. If manufactured into cottage cheese which is sold at seven cents per pound it is worth $1.00 per 100 pounds. We cannot convert all of our buttermilk into cottage cheese, but we can sell a certain amount of cottage cheese daily, as even the most of our cream or milk customers would be pleased to buy where the creamery has it for sale. It is up to the creamery to create a demand therefore.

Some creameries, but only few, are selling sweet cream in their own town. A demand can be created for a certain amount of sweet cream if we keep our eyes open for business. This cream can be sold at fifty cents per pound butter fat. Few people realize the scarcity of sweet cream in the larger cities and last year some of the larger ice cream factories were offering forty cents per pound fat f. o. b. the country creameries for sweet cream without being able to secure all they needed. Will it pay the creameries to look for an opportunity to dispose of a part of its products in this way?

How many creamery managers realize the importance of the ice cream industry in the State of Iowa. How many realize as to the amount that is consumed in his own town? How many of us have really considered how closely this business is related to the creamery business? In a town with a population of 1,000 people from ten to twenty gallons of ice cream will be consumed daily during the summer season. By making a profit of thirty cents per gallon we would by supplying our home town of size mentioned clear from $3.00 to $6.00 daily. The work required for handling this amount in a wholesale way will amount to from one hour to one and a half hours daily. I believe we are staying too far away from the ice cream makers of our state. Would it not pay us to get better acquainted with them? I believe we could learn from them and they could learn from us. Would it be out of place if we invited them to membership in our association?

But if we expect to make ice cream or to supply ice cream makers with cream we must insist on getting sweet cream from the farmers. It will perhaps have the effect that we will have sweet cream to use for butter making as well and I do not consider it unreasonable if the Iowa consumers demand that the butter they buy must be made from cream of the best quality. Iowa is noted for its agricultural wealth. Its people want the best that money will buy and are willing to pay for it whatever it is worth. Will it therefore not be policy for the Iowa creamerymen to furnish them with what they want?

We all agree that Iowa is producing good butter and at one time Iowa did produce the best butter in the world. Some years ago Professor McKay sent our Iowa butter to England and it ranked even with or was superior to all fancy brands on that market. Can we duplicate that today? Yes so far as it depends on the ability and skill of our buttermakers we can, but we are not giving him the material from which he can make it. In Denmark they deliver their milk to the creamery every day of the week except Christmas day. In New Zealand in a number of their creameries they deliver the milk to the creameries twice a day, morning and evening, and butter is churned from each separate lot. By adopting this system the people of New Zealand have been in a position to establish a reputation for their products. On the English market the New Zealand butter is a close competitor to the Danish butter. Large quantities of New Zealand butter are sold on the Pacific coast and wherever it is sold it is noted for its quality. The American butter has today a splendid reputation, but I assure you, gentlemen, that unless the delivery of sour cream to the creameries is prohibited it will mean a great injury to the reputation of our dairy products.

These ideas which I am here trying to present to you are not new. In 1907 Professor McKay delivered an address before the members of the Chicago Dairy Show in which he said: "The so-called large central plants through their avaricious greed for business, like swift running rivers, have created obstructions for themselves which they cannot control. In other words the fierce competition for business has resulted in making the farmer careless and indifferent about caring for his cream. We are all a little lazy, and do not work any more than we have to, therefore, if a farmer can sell his cream without giving it much care, he is going to do it.

Concerning the question of competion; if a dozen or more of the so-called co-operative creameries adjacent to one another or in the same country, would organize and hire a competent dairy expert to look after the leakages in the different plants and to see that each creamery secured a just overrun, a uniform quality of butter would be the result. Then the organization could sell this butter as one lot to the highest bidder, and if they bought the supplies for all the plants at one time, which is possible, they could secure them at the lowest prices. Such an organization could meet competition from any source."

When we realize that Iowa is one of the oldest and the greatest dairy state in the Union will it be proper for us to sit back waiting for reform to come from the other states? No, I consider that Iowa must be the leader and I believe that the Iowa State Dairy Association as a representative of the dairying industry of our state should take an active part in the matter of promoting reforms that will be of benefit to the consumer as well as the producer. The creamery men small and large all agree that the cream supply should be improved and I will at this time propose that a member is appointed by the local creameries, another by the creameries receiving cream by rail and that they appoint a third member and that these three men work in conjunction with the officers of the State Dairyman's Association formulating such rules or plans as they deem necessary for the purpose of improving our cream supply and that they shall be at liberty to bring the matter up before our legislators and demand such legislation as they consider essential to bring about results.

If we Iowa people stand united we will be able to produce results. The Iowa people are more optimistic today than they have been in the past. It has for some years been the general belief that Iowa was no place for a poor man and they came very near making us believe that Iowa was set aside mainly for wealthy retired farmers and that any one who was not in possession of wealth had rather move away to some other state where they could buy cheap land. We have today discovered that the Iowa land at from $150 to $200 per acre is cheaper than the most land elsewhere that can be had from $20 to $50 per acre.

We have the productive soil combined with other advantages which the newer states have to wait a great number of years to acquire. If the people of Iowa fully understand how to appreciate the resources of our state and the great possibilities which Iowa has in store for its young men and women and then advertise Iowa for what it is, Iowa would without question be a state to which there is no equal.

I have no time for a pessimist. I have in mind a certain man who was making plenty of money, but he was always afraid that his own people were going to take advantage of him. He was living in a certain town, he bought his groceries from a neighboring town, his dry goods and furniture from Montgomery, Ward & Co. of Chicago, and he passed the doors of his town creamery and sent his can of cream to a creamery about 200 miles distant. This is the wrong feeling existing between people of the same community who ought to be neighbors and to treat each other as such. We should always realize that the welfare of a certain town or community depends upon the welfare of the individuals of that community. As butter makers we may not consider the necessity of advertising the country. It may not appear to affect us directly, yet it does. If each one of us would start to make an advertising campaign in our respective territory we would be in a position to show up the dairying industry in its true light, and if we succeed in proving to the farmers that dairying is profitable they will be apt to gradually drift toward that direction and it will be much easier for us to prove to him how essential it is that he takes proper care of his milk or cream.

We are all interested in the welfare of our own creamery and must therefore also to a certain extent be interested in the welfare of our competitive creameries, for we may make as fancy butter as can be produced, yet if the general reputation of the Iowa butter is not maintained, it will reflect discredit to all butter produced in our state. Therefore let us all use our efforts for the purpose of having the words "Iowa butter" signify the same in the future as it does today. Today it stands for quality and purity. Let us all stand together.

President: We have with us Mr. B. D. White, of the Dairy Division, United States Department of Agriculture, who will talk to us.

ADDRESS.

B. D. WHITE, DAIRY DIVISION, U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

Mr. President, Ladies and Gentlemen:

I did not come here to talk. I didn't expect to be here at all, but I found it necessary to pass through Cedar Rapids, and of course I wouldn't go through without stopping.

I am glad to have the opportunity of meeting the Iowa Dairymen. It has been some time since I have attended a convention of the Iowa State Dairy Association in this city. I remember well, however, the first convention that I ever attended—in the early 80's in the city of Manchester. At that time, as I remember, they had a machinery exhibit, and among that exhibit was the first separator that I ever saw. The attendance was, perhaps, not as large as it is here today. I remember, also, of seeing a gentleman from New York City at that meeting, which was rather unusual. He talked on the subject of oleomargarine, and I remember some of his talk. He said this: "We have oleomargarine by the throat and we are forcing it to the wall." Now oleomargarine is a pretty slippery proposition, and instead of keeping our hold on the throat I think we want to sit down on it. It is going to be a product with which we have to deal in the future and it is going to require the support and the efforts of the dairymen to see that that product is sold legally and not for butter. We have recently had an opportunity to see some of the workings, and I have had a photograph taken of a so-called butter store. A large placard was placed in front of the counter which read, "Fancy Creamery Butterine." Now what is creamery butterine? Another placard contained the words "Dairy Butterine." These were new phrases, but they are capable of putting up new phrases.

We have had an opportunity to study the dairy conditions in Iowa as well as in other sections of the country and are pleased to know that Iowa is making, according to Mr. Wright's statement, over 100,000,000 pounds of butter. I believe this is true, but instead of making 100,000,000 pounds of butter you have cows enough in this state to make 200,000,0000 pounds of butter. See the difference in profit that it would mean if you could increase your product by 100,000,000 pounds, or double. I am not going to talk along that line, because you have dairymen to handle that subject.

I want to say that the work to be done by the dairymen rests largely upon the work and the activities of our local co-operative creamery managers and secretaries. I fear that most of them, or at least a large part of them, do not realize the changes that have been taking place in the dairy work the past five or ten years. I fear that they are content to operate their creameries and dairy work the way they did ten years ago. I can, or at least I believe, that the secretaries and managers must change their methods according to the changes of the times. What was true ten years ago or five years ago is not true today. The business has been revolutionized and revolutionized again and the men at the head of these institutions must put forth their best efforts and do the work in an up-to-date manner. One of your neighboring states has undertaken a work which I believe is in the right direction. You have in this state a dairy school for the buttermakers. You have been teaching the buttermakers and you have been preaching to them. They have been studying and they are as a whole efficient and competent to do good work, but, on the other hand, the secretaries and managers have not had that opportunity, and they are conducting the affairs of the creameries as they seem best. In some cases they do fine work, and in other cases they do not. I believe a good many of the failures in this and other states could be avoided if the managers knew the actual conditions and would be willing to put forth some efforts to correct the troubles that arise from time to time. Therefore, I believe that the work that has been going on, or a course for creamery managers similar to that one of your neighboring states has been conducting, would be a good movement in this state. I am glad to say that such a course has been started. I know that the manager attending a course will be worth many times more to the creamery than his salary amounts to. Therefore, I would urge you to attend and get your neighboring secretary to attend, because I know what it means to the industry as a whole.

When it comes to the buttermakers, you have men who can make good butter if they get good raw material, but you nor no other state has any buttermakers who can make a good piece of butter out of stale, sour, rotten cream. Work along that line, of course, must go hand in hand. The buttermaker and manager and the other officers must co-operate and show the way to the patrons; show the difference in price that they receive between a good and a poor raw material. We have figures, from this state, as well as others. Two creameries, for instance, are operating side by side. The one receiving a good raw product is making a good quality of butter which sells at a good price and in return the farmers are paid a good price, while the other creamery receives a poor raw product and their butter sells for a low price and the farmers are paid a low price accordingly. There was a difference of 3c a pound between these two creameries in the sale of the butter as well as that returned to the patrons. The patrons in one creamery receive more than 3c less a pound than the other creamery. That will happen to every one of you if you let your quality deteriorate. You can not expect the public to pay a fancy price for a poor butter. They do not have to do it. Therefore, it is up to you to correct these troubles in your own territory.

I am not looking at this matter in a pessimistic manner. I have confidence in the dairymen of Iowa and the United States that they are going to do the right thing sooner or later. As soon as the patrons realize that a poor quality of milk and cream means a low price for butter-fat they are going to deliver it in a better condition and receive a good price. I thank you.

President: I am sure that we all appreciate the talk Mr. White has given us. I notice that the chairman of the resolution committee is here and I will call on him to report.

Mr. Wright: As chairman of the resolution committee I submit the following for the approval of the members present:

Resolved, That the thanks of this association are tendered the Mayor and Commercial Club of the city of Cedar Rapids and to W. L. Cherry for his efforts in contributing to the success of this meeting, and we express our appreciation for the music by the Imperial Quartette, Mr. E. C. Lytton and also the speakers who appear upon the program.

Resolved, That this association is opposed to the fraudulent sale or use of oleomargarine; that we believe that a yellow color permits and encourages such fraudulent use and that we demand from our representatives in Congress support for such legislation as may be necessary to prevent the fraudulent sale of that product.

Resolved, That we pledge our moral and financial support both as individuals and as an association to the National Dairy Union in any efforts undertaken against the fraudulent sale of oleomargarine.

Resolved, Whereas an effort has been made to increase the freight rates on less than carload shipments of butter, and, whereas, we believe such increase would be detrimental to the best interests of the dairy industry, therefore be it

Resolved, That this association is opposed to any increase in the freight rates upon butter and will oppose such increase by any means in its power and that the officers of the association are authorized to take any action they may deem necessary in accordance with the spirit of this resolution.

Mr. Wright: I move the adoption of the resolutions as read. (Adopted.)

President: It has been suggested that we organize a sort of a boosters club here among the traveling men. This association appreciates these fellows and we need their co-operation. There is no organization among them and it has been suggested that something be done at this meeting. I therefore ask all the traveling men to stay for just a few moments after adjournment and perfect this organization if possible.

Mr. Mortensen moved that the president of this association be included in the Andrews resolution.

THURSDAY P. M., 2 O'CLOCK.

Mr. Johnson: In the absence of the president and the vice-president, I will call the meeting to order, and at this time I will introduce to you your newly elected vice-president, who will take the chair.

Mr. Stephenson: We will first listen to the reading of the scores. (Scores read by Mr. Sadler.)

Prizes, medals, etc., were also presented at this time.

In the whole-milk class, J. J. Brunner, of Edgewood, was highest with a score of 97 1-2, winning a gold medal. A. M. Hanson, of Northwood, was second with a score of 97, winning a $20 gold piece. W. H. Anderson, of Irvington, was third with a score of 96 1-2, winning $10 in gold. In the Gathered-cream class, J. S. Neil, of Malcolm, had the highest score, 95 1-2, and won a gold medal. A. D. Gimer, of Cleves, was second with a score of 95, winning $20 in gold. Third place was won by Watson Shick, of Volga, with a score of 94 1-2. He received $10 in gold.

Chairman: I am pleased to introduce to you, Mr. Guy Thomas, of Clear Lake, who will speak to you on "Organization."

ORGANIZATION.

GUY THOMAS, CLEAR LAKE, IOWA.

Mr. President and Gentlemen of the Convention:

I have been assigned the subject of organization. Now I may not confine my talk entirely to this subject, although I will try and stay as close to it as possible.

Every great thing has been accomplished through organization. To have a thorough organization you must have a system. Look at the great work the United States Government has undertaken in the building of the Panama canal. This work was not begun until a thorough system and organization had been perfected.

What would the great corporations do without an organized system? Take, for instance, the railroads, the Standard Oil Company and the steel trusts. It would be an utter impossibility for any of them to exist without organization and system.

Now if this organization and system is good for all of these mentioned, why is it not good for the creamery and dairy business? Why do we not organize?

To do this I believe the best way would be to organize the creameries into an association of about 10 or 12. These creameries form a cooperative organization for the betterment of the business. Hire an expert, if necessary, to instruct the dairymen in the care and handling of milk and cream and such other work and instruction that may be desired. Organize the creameries and dairymen in this way and you will begin to accomplish something.

Let the buttermakers of this association organize for the purpose of an educational scoring contest. Have them send a tub of butter once a month to some central point tributary to these factories. Procure some competent judge to do the scoring. The tub scoring the highest from each of these organizations could be sent to some central point and re-scored. In this way you could determine where and under what circumstances the best butter was being made, and it would create an interest among the buttermakers.

To illustrate. Suppose Jones and Smith were neighbor buttermakers, and belonged to this organization. They send butter regularly to the monthly scoring contest. Jones has the good luck to score a little higher than Smith. Don't you suppose Smith would begin to look around to see what the trouble was—to find out why Jones was getting a higher score? About the first thing Smith would do would be to start an investigation. He would first look after the cleanliness of his creamery. Then he would go after his patrons and tell them that his neighbors were making better butter than he was, but under different circumstances, and if they intended to get to the front and stay among the top-notchers they would have to take better care of their cream. They would have to deliver it more than once or twice a week. No buttermaker, no matter how proficient he may be, can make butter from cream a week or so old.

He would tell them more than this. He would tell them that the time had come when every patron would have to sit up and take notice. If they intended to remain in the dairy business they must certainly take better care of their cream, deliver it in a more wholesome and sanitary condition. If this was done there is no reason why he could not make just as good butter as his neighbors.

I believe something of this kind, if accomplished, in the way of educational work, would do more to improve the dairy and creamery interests than anything else.

Now just a word to the buttermakers. Systematize your work. Keep your creameries clean, neat and tidy both inside and out. Do everything you possibly can to attract attention. Plant a few flowers in summer about your creameries. Keep your yard and driveway in a nice clean and attractive way. You may think this does not amount to much but just try it and see if you do not get a better quality of cream. You should keep everything about your creamery so nice and clean that your patrons will be ashamed to bring you poor cream.

Chairman: H. E. Fowler, of Hanlontown, is next on the program.

CREAM SCORING AND RESULTS.

BY H. E. FOWLER, HANLONTON, IOWA.

The subject that has been assigned me is simply a new way of educating the patron in the proper care of his raw material. The great task before us in connection with our cream-gathering creameries is the education of the patrons to properly care for their cream. This is the starting point in the great fight to raise the quality of our butter, which we have been told has been gradually deteriorating for the last ten years. The great cry all over the country is for more good butter. We are told that most of the poor butter that is being made is from gathered cream. You ask the buttermaker the cause and he will tell you it is on account of the poor raw material he receives and he generally tells you the truth. I firmly believe that the whole-milk creamery is the ideal system for co-operative buttermaking where conditions of settlement and milk supply will permit, because it is easier to control the conditions which contribute to the making of a high-grade article, but where conditions will not permit the use of this system and we are compelled to use the gathered-cream system then we must do our best to so regulate those conditions which go to make a fine quality of butter as to give the best results possible.

Of all the plans that I have tried, (and I have tried nearly everything I ever heard of) none have given such satisfaction and lasting results as the cream-scoring system. We found that fully 50 per cent of the poor cream that was being delivered came from lack of knowledge of how to properly care for it, and I believe that this will prove true with 90 per cent of the poor cream that is being delivered to the creameries today. When we began the cream scoring we found that a good many of the cans which at first sight appeared to be perfectly clean, upon careful inspection along the seams, contained enough dirt to spoil ten cans of cream. This fact was brought to the attention of the patrons with instructions how to remove the same and how to keep clean afterward, and I want to say right here that I will give anyone a $10 bill that will come to my creamery and find a can of cream delivered in a dirty can. This may sound a little like bragging, but it is a fact and a fact of which I am very proud. Another thing we found and which has been eliminated, was the practice of flushing out the separator bowl at night and allow it to stand full of water until the next morning, and then doing the separating without first washing. In warm weather this water would sour and impart to the cream a dirty dish-rag flavor. This is something that is being done more or less all over the country and is one of the chief causes of poor cream. Among other causes for poor cream was the mixing of warm cream with cold, keeping separators in the barn or kitchen, milking with wet hands, keeping cream in cellar or too near the barn yards. By studying each man's conditions and pointing out to him where he was right and where he was wrong we have been able in nearly all cases to wipe out the faults and the result is that we receive from that man nothing but a pure, sweet article.

True it is that there are some people you can not coax; for those the cream scoring will do no good. There is nothing to do but let the law take its course. We have found, however, that by pointing out to each individual the faults with his cream and showing him in a kndly way how to correct them, we have in nearly all cases corrected these errors and with but few exceptions we are getting nothing but the finest cream. It was the abundant success of this cream scoring idea that led me to suggest the co-operating of several creameries for the purpose of hiring an expert to devote his entire time to scoring cream and dairy improvement. The suggestion met with such general approval that we now have what is known as the North Iowa Dairy Improvement Association, of which we are very proud, and one which we are confident will bring thousands of dollars to the creameries belonging to it.

I do not know as there is any recognized standard for scoring cream, but the one that is used at the Hanlontown creamery is as follows: Flavor 50; acidity, 25; per cent of fat, 15; can, 10. The first thing the judge scores for is flavor. This is done the same as a judge scores for flavor in butter—by the taste and smell, but mostly by the taste. The next is the acidity and the standard adopted by the judges was that all cream not showing over 12 c. c. of acid would be called sweet. Cream showing over 12 c. c. of acid, one-half point should be deducted for each c. c. over 12. Thus cream showing 16 c. c. of acid would score 23 on acidity. The per cent of fat was determined by the test. All cream testing 25 per cent of fat or over would receive 15, or perfect score; cream testing under 25, one-half point should be deducted for each point it tested under 25. Thus cream testing 23 would be scored off one poinnt. Cans were scored off for rust and dirt, but all cans being free from both rust and dirt were given a perfect score. Each patron is given a score card showing what his cream scores, pointing out the defects, if any, and instructions how to remedy such defects. The judge should be a man of recognized ability, and one in whom the patrons have the utmost confidence, as the success of the cream scoring depends almost entirely on the judge.

Have all scorings surprise scorings. Never let a patron know when the judge is to be present.

A cream scoring conducted in a proper manner and with a good judge will bring results that will satisfy even the most skeptical. I thank you.

DISCUSSION.

Member: Did you give prizes?

Fowler: Yes. We had a list of 10 prizes. The first was $10 in gold; the second was $5 in gold and the others ranged down to $1.50. That was for the first year. At the end of the first year at the annual meeting of the creamery board their attention was called to the scoring. The patrons were asked if they wished to continue the scoring by taking a vote on it. They unanimously voted to continue the cream scoring and without prizes.

Member: How did you organize the North Iowa Dairy Improvement Association?

Fowler: The North Iowa Dairy Improvement Association is for the improvement of the quality and quantity and lessening the cost of manufacture. The way we came to organize this association is the success of this cream scoring I was conducting in my creamery. That is what led me to suggest this organization. I saw after the first year of cream scoring what an improvement it made in the quality of my cream. The first year I was at the Hanlontown creamery my highest score was 91½. The next year my average score in the six months' contest was 92½. This year in the six months' test my average score was 92.75. This butter was all made from gathered cream without the use of a starter—just as the cream came in. So you see this has been a great improvement in the quality of cream I have received. The patrons took an interest in this as the scoring was done by Assistant Dairy Commissioner Odell and Howard Reynolds, of Mason City. Both these men are recognized judges. The advice they gave the patrons in regard to their cream made them take a great interest, and as soon as they saw what it was doing for them—bettering the quality of their cream and likewise the price they received as soon as this interest was created we commenced to increase in quantity. I thought if we could do this in one creamery alone we could accomplish a great deal more if we could have one man with us all the time. This led me to suggest the idea of creameries going together. I approached the manager and secretary of the Lake Mills creamery on the subject and he was heartily in favor of it. I talked with several others and they were also in favor of it. We then conferred with and secured the aid of Prof. Van Pelt.

Member: How are you to pay this man whom you hire?

Fowler: The expense of this association is handled by taxing each creamery one-tenth of one cent per pound of butter manufactured. Thus each creamery pays according to the amount of butter they make.

Member: Don't you think a standard for the per cent of fat of cream scoring perfect at 25 is too low? I believe a better article can be made if cream would test around 30 and a good commercial starter added.

Fowler: I brought this question before the board of directors at my creamery and ask them to establish the standard, which they did at 25. However, that can be changed to 30 or 35 and bring the same results.

Member: I would like to ask Mr. Fowler whether his cream is all delivered by the patrons or whether he has haulers. In our creamery most of the cream is delivered by haulers.

Fowler: My cream is all delivered to the creamery by the patrons themselves in their own individual cans. One of the things that led me to suggest the hiring of an expert was because all the creameries did not have the same system—some had haulers and some not. An expert can go over the routes and inspect conditions on the farm. His time belongs to the creameries.

Shilling: I regard this the best method that has ever been suggested. and Mr. Fowler has brought it out in good shape. He has given ideas that every creamery in the state of Iowa could make use of. The possibilities of it are greater than anything that has ever been tried. First because it is of a co-operative nature.

Member: I would like to ask what the difference is in the price of your butter now and before you commenced this scoring.

Fowler: About one cent per pound.

Member: How about your overrun?

Fowler: My overrun averages 22 per cent.

President: The next is an address on "Harmony" by J. B. Feldman, of Dyersville.

HARMONY.

J. B. FELDMAN, DYERSVILLE, IOWA.

Mr. President, Ladies and Gentlemen:

Our able secretary requested me to give a short talk on the subject, "How to Maintain Harmony in a Co-operative Creamery." I am not able to give you anything high-class in oratory, nor can I do justice to the subject but will do the best I can.

We all know it to be a fact that we must have harmony to be successful, and a co-operative creamery that is in charge of a good, up-to-date buttermaker who has the good will and confidence of his patrons can meet any competition on the face of the earth.

Let us now briefly consider what a buttermaker should do to have this confidence. He should have everything in the creamery in good shape, especially his scales, both the cream scale and the cream test scale. He should be strictly honest in all his work, treat all patrons squarely and have no favorites. When a patron complains that his test or weight is not correct, it is up to the buttermaker to have that patron come to the creamery. Tell him to bring a sample of milk or cream and get him to stay with you. Be congenial with him, show him that your testing apparatus is clean and in good shape; have him weigh up and read the test himself; show him that you can duplicate the test and that it will correspond. Put in a little time with him and he will be convinced. If he is not convinced, have him take a sample with him and send it to the state dairy commissioner. He will do this and I assure you that your own test and the dairy commissioner's test will not vary much provided you have done your part right. That patron will be satisfied and tell his neighbors about it. If it is possible, have one or two of your directors present when you do this testing for the patrons, for they meet more frequently and can talk this over with each other.

Have your patrons visit the creamery and see the way you are doing the work. Do not be afraid to visit with them; tell them a story. (If you do not know any some of the traveling boys will help you out.) Invite your patrons to bring down sample of the milk and test it for them in the afternoon. They will be pleased about it and tell others.

When you have to talk in regard to quality see your patrons alone. Do not jump at him in a crowd, but use a little tact and suggest some method how his cream or milk can be improved. Keep him in good humor and in nearly all cases he will try to do better. In a serious case call on the State Dairy Department. It is a duty to assist our officers in the affairs of the creamery, and if our secretary or manager does make a mistake, as we all do, do not advertise it to your neighbors, but cover it with the mantle of charity. Help and advise and we make friends for ourselves and the creamery.

When the annual meetings come around and some of the patrons have a scrap that brings up matters outside of the creamery business but threatens to come up at the meeting, it is up to the buttermaker to see them and tell them not to mix that up with the affairs of the creamery. If they want to fight and must fight, let them take a day off to do it, but let the affairs of the creamery be sacred.

A great aid to keep up the good feeling of the patrons is to have a good dairy paper among your patrons that instructs them in the great dairy industry. They will read it and take pride in it and furnish a good raw material.

Now a word in regard to keeping on the good side of our neighbor creameries, no matter whether they are co-operative or centralized. It pays to be in harmony with them. Meet them and exchange ideas. None of us wants all the cream and milk. There is room for all. Honest competition is no harm. We are human. When everything comes our own way we are liable to get lax. That reminds me of the boy that went to school and had to recite out of the bible and then explain it. He chose "Daniel in the Lion's Den." He said: "They cast Daniel into the lion's den, but Daniel did not care and apparently the lions did not give a damn for Danny." But, he said, "If fleas had been biting the lions it might not have been so fine for Dan." The same for us if we have competition. We will do the best there is in us, watch all the small details and stop all the small leaks and the patrons will profit by it. Let our creamery and our conduct be clean, and the buttermaker will be respected as well as the minister and the banker of the town. Circulate the spirit of good fellowship among one another and while we live let us be happy for when we are dead we are dead all over.

President: Our next subject is something I feel is worth consideration. There is nothing that will help out the quality more than farm sanitation. Our vice-president will talk to you on this subject. Mr. Stephenson:

FARM SANITATION.

F. W. STEPHENSON, LAMONT, IOWA.

Mr. President, Ladies and Fellow Creamerymen:

There have been so many things pass over my mind since attending this convention that it is difficult for me to concentrate my mind on the subject of "Farm Sanitation."

I grew up to manhood on the farm and spent several years there since I became a man before I took up the creamery work. There is nothing I enjoy better than tilling the soil, planting the seed and watching nature develop it. There are three things that come to my mind. One is the silo—the food product, another is the breeding of the herd. and the next is sanitation. You realize, brother patrons, that no man can make a fine piece of butter without he has good raw material. You will remember, possibly, what Mr. Odell said last year at the state convention in Waterloo in regard to the condition of many hand separators on the farm. I will tell you it is a shame. What we need at the present time is not a buttermaker able to make 97½ butter, but 97½ milk and cream from which to make the butter. I wish I could have the honor Mr. Brunner has, but I can not get it. If I did I would possibly be like the Democrat who, when a heavy storm came up, climbed into a hollow tree. He stood there congratulating himself on the fact that he was out of the rain. When the storm was over he tried to get out but couldn't. Then he happened to think that he was a Democrat and began to shrivel down until he was so small he walked right out.

I am going to speak to the buttermakers this afternoon, looking at this matter from a buttermaker's standpoint. I believe I am safe in saying that 50 per cent of the farmers today are farming the same as they did 25 years ago. I believe feed is costing them as much money or more than it did then. Can they afford to do it? Remember this. They have three times the money invested in the same farm they had 25 years ago. They are raising practically no more to the acre than they were then. You will agree with me, I think, when I tell you it takes two acres of pasture to pasture a cow. It takes about two acres of meadow to furnish hay or rough feed for her, and it takes nearly another two acres to raise corn enough for her a year. The average acreage, I believe, in the State of Iowa will produce nine tons of silage to the acre. I am told that eight tons of silage will feed a cow 365 days where one or two acres of hay will not furnish rough feed enough. There is a saving of about four acres of your land.

I believe that the farmer is making a mistake these days for the simple reason that he is not using his head to figure out these things. I have a farmer in our community that I believe is an up-to-date farmer. He is a farmer that I take pride in holding him up before the patrons of my creamery as an ideal farmer. Why? Because I know he is producing his feed for his stock for less than half of what the average farmer is producing it. To a cow on full milk he gives a bushel and a half basket of silage twice a day. He has a measure that holds about three pounds of feed. That feed consists of oil meal, bran and corn meal in nearly equal parts. I ask him if he knew what his cows were doing and he said he did. "My cows", he said, "are paying me $2 for every dollars worth of feed I put into them." Isn't that a good investment?

I was talking with a man coming down on the train—a secretary of a certain creamery. He told me that they had a buttermaker who was giving them a 7 per cent overrun. Isn't that ridiculous where it ought to have been at least 21 or 22 per cent? Think what a loss this was. A difference of a 20 per cent overrun and a seven per cent overrun will figure out 4½ or 5c on every pound of butter manufactured.

I do not believe there is a buttermaker in the state of Iowa who can afford to make butter without a starter. There are any amount of them doing it, but I am sorry of it. You can't afford to do it even if you would have to pay 2c a pound for milk to get it.

Now another thing that appeals to me. We as buttermakers had ought to enlighten our patrons along the line of breeding. We should get our farmers to understand they must look to the milk strain when they buy a sire to head their herd.

Another thing. I am going to tell you a little thing that happened to me. I went into a hardware and the tinner was getting ready to mend a can. I asked him if that can belonged to one of my patrons and he said it did. I examined it and told him he need not fix it. He said the man left it to be fixed. I told him it was not fit to deliver cream in, no matter to whom it belonged. He said it belonged to the president of the creamery board. I told him I didn't care if it belonged to the president of the United States I wouldn't accept cream delivered in a can in that condition. Just at that time the president came in. I showed him that it wasn't fit to deliver cream in and he says, "I believe you are right." He bought a new can.

It is our duty to impress upon our patrons the importance of cleanliness in handling their milk products. If we get a low score on our butter I believe you and I are in a large degree to blame because we didn't point out to the patrons the defects in their raw material and prescribe a remedy.

Another thing, I impress upon the patrons of my creamery at the annual meeting is that we will not receive any poor or sour milk at the creamery. I positively refuse to take it. I let them understand that if they do send it I will return it. It is necessary that we be very strict because when we have buter judges capable of pointing out to you the defects in butter as we have we can't afford to follow along these lines. If we as buttermakers enforce a rule of this kind it will help us to raise the standard of our butter.

A certain patron of my creamery said to me a short time ago: "I believe in every man having an ideal—a high standard to strive for. My ideal is to have a registered herd of Holsteins, and if God lets me live ten years I will have it." If you and I can get patrons as enthusiastic as that man we will raise the standard of butter to the highest quality.

The place to start sanitation is on the farm. Go out and mingle with your patrons. Take a little time and drive out and visit them if it is not for more than five minutes. I was impressed with something at Milwaukee. A gentleman from Washington, D. C., in his adress, said: "You can not go out to a farm and lay down seventy-five rules and expect the farmer to follow them at once. You have to use a lot of tact when dealing with the farmer." If you see where he is failing in some particular try and enlighten the man along that line. Sow a little seed right there; and see if it doesn't begin to develop. As soon as he becomes enlightened on that subject begin another. Sometimes I think that we, as butter makers, are not interested as we ought to be along these lines. I am interested in the dairy business—in the national association, in the state association, in the district association, but I am interested more than all in the welfare of my patrons. You may think I am radical, but, gentlemen, your interest and mine is, first of all, to be among the patrons of our creameries. Charity begins at home. I am interested in my creamery at Lamont more than anywhere else, and as long as I stay there I am going to work to make as many dollars for the patrons as I can because they pay me to do it. I believe that is the duty of you and I—not to work particularly for wages and for self but for the interest of our fellow men and the interest of the dairy business in the state. I thank you.

DISCUSSION.

President: I am only sorry that there are not several hundred of the cow men here this afternoon to hear that address. I have thought for a long time that the sooner we bring the buttermaker and the patron together the better our butter would be. There are two things that I think have troubled me as much in my 25 or 30 years' experience on the dairy farm as anything. One is, how can I make my men be more cleanly about their milking and to take better care of their milk room. The other is the care of young calves. I would like to have these subjects discussed.

Member: How do you do about sour cream, Mr. Stephenson? What do they do when you refuse it?

Stephenson: I wish to say that we only have seven cream patrons. The rest is whole-milk. It matters not what they do. I presume they take the cream back home and feed it. It is a bad thing to criticize or find fault with a patron in the presence of another patron. You ought not do it. If you have trouble with the farmer don't call him down in a crowd. The thing to do is to drive out to his place and talk it over.

President: I agree with Mr. Stephenson. What we need is a little more nerve used in a tactful way.

Adjournment.

THURSDAY EVENING, 8 O'CLOCK.

President: It will be something new to hold an Iowa State Dairy convention without Prof. G. L. McKay, but we are very sorry to say that he can not be with us tonight, but he has sent a worthy representative in Mr. Bouska, his assistant, who will read Prof. McKay's paper.

PAPER

BY PROF. G. L. MCKAY, CHICAGO, ILL.

Mr. Chairman, Ladies and Gentlemen: It is needless for me to say that it is always a pleasure for me to attend an Iowa convention. In coming to this convention, I am reminded of that popular song, "I Love my Wife, but Oh You Kid," I would say, "I love Illinois, but Oh You Iowans."

I have often wondered whether the people in this magnificent state that is known practically the world over for the productiveness of its soil, fully realize the esteem in which it is held. A yew years ago, when returning from a trip to Northwest Canada, I spent part of a day at North Bay, where I met a number of tourists from this and other countries. Two prominent gentlemen sat opposite me at table; one a distinguished physician, and the other a judge. Some remarks were exchanged as to what states we represented. I said that I was from the state of Iowa, when one of the gentlemen said, "You are from the black-loam state," and he further remarked that he had traveled around the world several times and that he had no particular interest in Iowa but in his judgment Iowa was the best and most fertile country in the world. While these remarks brought out some controversy among our Canadian friends, I could not help but feel from my own observation, that the gentleman had spoken the truth.

I believe that the time is not far distant when the land in this state will be worth almost double its present price. This will be brought about by more intensified farming, When we consider what land is selling for in some of the European countries, the prophecy that I have made is a very moderate one.

Mr. A. Jensen from Humboldt county, Caliafornia, called at my office some days ago. I was surprised to hear him make the statement that land was worth from $300 to $450 per acre in his county. I asked him what the farmers were engaged in, that they could afford to pay such high prices, when he replied, "exclusive dairying." He further stated that in that particular locality they had green grass the year around, as they were close to the sea. In addition to this, he stated that they had not confined themselves to any particular breed of dairy cattle but that they had for years been breeding up their cows for dairy purposes and that their average butter production was over 300 pounds of butterfat per cow.

This set me to thinking and comparing the possibilities of our land with theirs. It is true that we do not have green grass the year around and where cows do not get succulent food the year around they cannot produce as economically. Succulent food, however, can be provided by the use of the silo. An acre of the average Iowa corn will produce enough ensilage to feed three cows 40 pounds each per day for a period of 200 days, or during the feeding period. It is surprising and I might say amazing when we come to think of it, what few silos we have in this great corn state of Iowa—a state that can rightfully claim to have the greatest agricultural journals that are published on the Continent, as well as one of the leading dairy journals.

These papers are constantly giving information on the most economic methods of farming. In addition to this it is our boasted pride that we have one of the greatest agricultural colleges to be found in the world. In connection with this college we have a great extension department that is constantly giving out information to the public. Yet, in the face of all this, only a few silos can be seen in the whole state of Iowa.

I visited the Province of Ontario, Canada, during the past summer, stopping at the Ontario Agricultural College and when discussing the question of silo construction with Prof. Day, I learned that in the adjoining township one contractor had put in no less than 36 cement silos during the past year.

Some years ago these people started in with wooden silos. They have demonstrated to their own satisfaction that the silo is an indispensable adjunct to economic dairying. They are now building permanent silos. In some places steel boiler plate treated with a certain paint that prevents the metal from corroding is used in the construction.

Possibly the reason why Iowa has not taken up with the silo question more rapidly is because the state is so prosperous and adapted to so many lines of agriculture that farmers have never found as yet, the necessity of making any great change in their system of farming. If a man is well clothed, well housed and getting three good meals every day, he does not see the necessity of experimenting so as to better his condition. This is true politically as well as otherwise. As long as the country is prosperous the people are contented and satisfied with the party in power. Land, however, is becoming so valuable that methods of farming practical ten years ago, are not satisfactory today.

In the kindergarten system of education the children are taught by observation. It is staid that "seeing is believing.' That common expression, "I am from Missouri, you have got to show me," is appropriate anywhere. The kindergarten methods so convincing to children are applicable to men, as

"Men are only boys grown tall,
Hearts don't change much after all."

I hope the time is not far distant when we will have demonstrating farms in various parts of the State connected with the State Colleges, where the public may be educated in farming by observing the practical demonstrations. The more useful these educational institutions become to the public as a whole the more thoroughly they will be fulfilling the purpose for which they were intended.

We have in a country a great many men who are giving practical demonstrations in farming to the community in which they reside, owing to the excellent manner in which they carry on their occupation. As an example, I will cite Ex. Gov. W. D. Hoard of Wisconsin. I had the pleasure of visiting his farm twice during the past season. I am satisfied that it would pay most any dairy farmer in this country to go there and investigate conditions on that farm. They will find a practical demonstration of what is possible on a well regulated dairy farm.

The Governor has 190 acres of land. When he bought this farm it was somewhat impoverished from excessive grain growing. By intelligent methods he has made it one of the most productive farms in Wisconsin. I have never seen better crops of alfalfa grown in any part of the country than I saw there last summer.

He has a barn that any good farmer might build. It is one of the most perfectly ventilated barns that I have ever inspected. The "King" system of ventilation is used. The second time I visited his farm, the crops of alfalfa were stored in the barn. The alfalfa hay was cured in such a manner that it retained all the fine leaves and had the sweet clean odor of freshly cut hay. In this barn he usually keeps a herd of 40 Guernsey cows—a beautiful sight to behold. Twenty-two of them I have been told had an average of 446.43 pounds of butter-fat per cow, or 510 pounds of butter. His buildings, his cows, and his farm are as far ahead of the ordinary dairy farm as a Pullman car is ahead of the ordinary day coach. Some one asked me recently if the Governor made this farm pay. I received a letter from him recently concerning this question which I will read to you:

MY DEAR MCKAY: I have your letter of the 26th inst. and note your request for some data concerning my herd. The herd consists at the present time of 36 cows. Usually when the stalls are full there are 40 cows. They are registered Guernseys, all of them, and are handled for the combined profit of their milk and progeny. Twenty-two of the herd have gone through the advanced registry with an average production of 8,242 pounds of milk and 446.43 pounds of butter-fat or 510 pounds of butter. The average wholesale price of butter at Elgin last year I think was about 27c. This would give an average earning per cow of the herd in butter of $137.92. The skimmed milk I consider worth $16.20. This would make the earnings of the cows $144.12 at the pail. Their keep was $45 per head. This leaves a net profit above the cost of feed $99.12 on a creamery basis, such as many farmers might practice.

I took the farm twelve years ago, very badly run down. It had been managed by tenants for about forty years. My present foreman had been the last tenant on the farm for the two years previous. He informs me that the average production of the farm today is at least double what it was during his experience with it. My definition of a good farmer is one who farms for the increase of fertility and who sees to it that the land is supplied with elements of sufficient nutrition to make up for all the losses in crop growing.

In answering Gov. Hoard's letter, I stated that I would not want to burden him or have his farm run over with visitors but that I would like to see hundreds of our dairy farmers go there and observe the practical demonstrations that are given in such a manner that any intelligent man could apply them on his own farm.

If all the milch cows in this state produced on an average the same as Gov. Hoard's cows, Iowa would be producing more than half the butter that is made in the United States, and the revenue would be increased from dairying alone, over $50,000,000.00 annually. The Governor's farming is not only an inspiration to that particular community but it is an inspiration to the whole state.

There is no line of agricultural pursuit today that is better adapted for conserving the fertility of our soil and at the same time gives greater returns than dairying, and the State legislature has acted wisely in making appropriations so as to encourage this line of work.

My friend, Mr. W. W. Marsh of Waterloo, Iowa, I believe acquired wealth and became famous through the cream separator that he manufactures. While these things are good so far as they go, the greatest work that he has ever accomplished and a work that will hand his name down as a benefactor to the state, is the fact that he gave $1,000 to establish test associations that would enable our farmers to determine whether their cows were a source of profit or loss.

These tests, or lessons of observation, must necessarily be a source of education to the participants.

If the creameries of this country, whether co-operative, individual, or so-called centralizers, would have a meeting sometime during the year at a given place and bring in a few of the best cows and have someone thoroughly posted on cow culture give the records and talk to the farmers on the importance of keeping such cows, I believe it would tend more to create harmony and uplift the dairy business than anything else that I could suggest.

It is surprising how the civilized world today depends upon that little country called Great Britain for the up-building of its herd with full blooded stock. We import from that country horses, cattle, sheep and swine.

One of the greatest factors in building up the live stock industry in Great Britain has been the agricultural show known as the "Royal Agricultural Show." This show has been moved from place to place in the British Isle, thereby bringing the fine stock to the people, instead of depending upon the people to go to some central point to see the stock. These demonstrations at their doors had the effect of stimulating an interest and creating a desire for good stock among the people.

I would like to see the great dairy show that was recently held at Milwaukee shifted from state to state for the next ten years at least, thus bringing the best herds of dairy cattle that we have on the continent to the very doors of our farmers. I believe that the people of Iowa should put forth a special effort to have that show held in this state next year. It is not right to confine a good thing to one place, especially a show of such great educational value to the dairymen of the United States, as the National Dairy Show.

Iowa, owing to its natural climatic conditions, its fertility of soil, and its adaptability to the growth of forage plants, must necessarily become one of the greatest butter producing countries in the world.

The greatest menace to the future prosperity of the dairy industy is the fraudulent sale of substitute butter. These frauds with various names have been masquerading under the guise of butter. This is one line of business that seems to be entirely based on fraud, as the manufacturers of the various substitutes are not willing to sell their goods on their merits. They want to palm them off on the public as butter, and I must confess that it is alarming how this fraud is perpetrated on the consuming public, especially in the large cities.

Some of our trade journals have foolishly championed the cause of these fraudulent substitutes as the "poor man's butter." The Philadelphia Times made a special investigation on its own account, to determine to what extent oleomargarine and butterine were sold for butter in their state. Out of 118 lots of supposed butter, bought at different stores in the usual manner, at 30 cents per pound, it was found that 73 per cent was oleomargarine. So we see that these men are not willing to sell their goods for what they are worth, or as "poor man's butter," but want to palm them off on the public at the highest price of the best grade of butter.

In seeking aid to get legislation favorable for the sale of their nefarious product, they have raised the cry to our beef friends that it is to their interest to aid the oleomargarine people in getting legislation favorable to their cause, otherwise the price of beef would go down. Carrying this same argument a little further and taking it for granted that they succeeded in driving butter out of the market by this cheap substitute or at least that they succeeded in lowering the price of butter to such an extent that it would not be profitable to dairy, then the dairy farmers would turn to beef production. The result would be an increased production of beef and a lowering of prices, so we find that that argument has no merit.

Nature has designed the fats found in milk of all animals as a suitable nourishment to the young. They are easily digested. The normal temperature of the body is about 98°. The melting temperature of butter fats ranges from about 90° to 99°. The melting temperature of eleomargarine is usually from 102° upwards. This product that we call oleomargarine originated in France about 1870 and was entirely different from the present cheap stuff that we find in our markets.

During the Franco-Prussian war the French government asked Mege-Monrier, their noted chemist, to investigate the problem of getting a good wholesome and cheap substitute for butter for the use of the army. In a short time he succeeded in getting an excellent wholesome substitute that very much resembled butter. This article was named "after the discoverer and the fat from which it was made, viz.—"Margarine Monries." Two years later, the Paris health council permitted the sale of this new fat in the commercial market providing it did not come under the name of butter.

The process that the noted French chemist used was a good one, as only the best fats were used, and those that had a low melting point. He took into consideration the digestibility of the food product. As the business extended it was found that there were not enough fats of this kind to supply the demand, hence the original process of oleomargarine had to give way to a cheaper one, in which the low grade fats and other cheap substitutes were used. As a result the ox-tallow which was formerly purified and melted at a temperature of 113° F. was now exposed to a more incomplete process of purification and melted at 140°F., thus the question of digestibility became a secondary consideration.

According to patents taken out in Europe later on the following fats were used:

> Bacon fat, goose fat, veal tallow, stearin fat from soap manufacturers, slaughter house fat and fat from flaying houses. These were used in addition to ox-tallow. Some of these fats had a very strong odors which were eliminated by the use of strong mineral acids.

In looking up the kind of fats used by our present day packers, we find in the book published by Nickerson & Collins of Chicago, Ill., and edited by Mr. F. W. Wilder, who was superintendent in two large packing concerns for a number of years, that the oleo oil is produced from the following fats:

> No. 1 oil.—Caul fats, ruffle fats, caul pieces of gut end; brisket trimmed from the bed pickings; crotch trimmings, from the bed pickings; paunch trimmings, pluck trimmings, reed trimmings, and heart casing fats.
>
> No. 2 oil.—Gut ends; small fats; chipped fat which is taken off on the middle guts; machine fat, which is fat taken off on the round guts by the fatting machines, heart trimmings, pluck trimmings, miscellaneous bed pickings of the second grade, kidney fats, clean trimmings from cattle whch are being cut up for canning or sausage purposes, skimming from scrap vat of No. 1 oil.

In addition to the numerous delicate fats which I have just mentioned, I am informed that sometimes the skimming from the floor washing tank is added.

In connection with this, cheap vegetable oils are used and we are told that even paraffine at times, has been found in this product.

The consuming public has certain rights that should be protected. When it asks for butter and is willing to pay the price, it should be able to get the same, therefore this question—of great importance to every citizen who believes in honest methods. I cannot impress upon you too strongly the fact that these packers are thoroughly organized and are going to do everything in their power at the next session of congress to break down the color line so they can sell their cheap substitute for butter. No dairyman should think for a moment that his business is not threatened. Oleomargarine can be produced at from eight to eleven cents per pound, hence if these fellows can sell their goods as butter, they can afford to spend money for campaign purposes and fight the dairymen.

Every indication points that the coming battle on this question will be a fight to the finish between the manufacturer of bogus butter and the dairymen of the country.

In Illinois they have elected what might be termed the champion of bogus butter to the United States Senate. We have the spectacle now of a man running for Congress in the Sixth District of Chicago whose factory has been fined a number of times by the U. S. court for the fraudulent sale of bogus butter or oleomargarine. This gentleman has been termed through the press "Bogus Butterine Bill Moxley." Such a combination in the House and Senate should be a warning to the dairymen that they must organize and be prepared for any emergency. I thank you.

President: There are many in this audience that know how hard and long this association has worked for some state aid or state appropriation. Now when your Legislative Committee visited Des Moines last winter we found at the head of the Appropriation Committee Mr. E. R. Moore of this city, and I am glad to introduce this gentleman to you tonight. He will tell you something about the appropriation and anything else that comes to his mind.

ADDRESS.

HON. E. R. MOORE, CEDAR RAPIDS, IOWA.

After accepting your secretary's kind invitation to address you I felt some misgivings as to the propriety of appearing before you, for it seemed improbable that a mere business man could have anything of value to offer to the representatives of one of the greatest and most important industries in the state. On pondering the matter, however, I recollected that some six weeks ago I bought two Jersey cows. So now, when I shunt the banking part of me into the background and keep only those two dairy cows in the forefront I can truthfully insist that I am in the dairy business and that our interests are in common.

There is another reason why I should feel just a little afraid of dairy and creamerymen. The creamery interests, about 18 months ago, came near proving my ruin, at least my political ruin. After I was renominated for the legislature, the Democrats in this district met in convention and named as my opponent a creameryman. He was one of the brightest, cleanest, ablest and most popular men in the county, and only for the fact that he providentially withdrew and his place on the ticket was filled by just an ordinary man, whom I easily defeated, I might last winter have remained at home chewing the cud of sweet and bitter fancy, while he would have been showing stubborn legislators how to make a cow produce two pounds of butter where formerly only one grew. In fact, I was a good deal like the old man who formerly lived in the northern part of this county. He was a pessimist. Nothing ever suited him. He looked at the world through blue glasses, and all this notwithstanding the fact that Providence had treated him reasonably well and endowed him with a fair share of the world's goods. To put a cap sheaf on his real imaginary troubles he suffered a stroke of paralysis. While he was confined to the house a revival was started in town. As soon as the old man was able to get out he attended. He sat on a front seat and the evangelist noticed him. One of the deacons informed the preacher that this old fellow's name was Smith, and that he was one of their oldest and most substantial citizens. After while the exhorter leaned over and said: "Mr. Smith, won't you please tell these dear people what the Lord has done for you?" The old man slouched to his feet, his face all drawn down on one side and said: "Well, if you want to know, Ill just 'tell you. The Lord has darned near ruined me."

Perhaps I should feel that the dairymen nearly ruined me.

However, I promised your secretary that I would tell you something about dairying legislation and particularly that which was introduced into or enacted by the Thirty-third General Assembly, the last in session. To tell the truth, I am not in as good a position to give you the real inside of the history of that legislation as your officers and legislative committee are. About two years ago the dairying interests of this state and this association represented by its legislative committee, organized the most determined and, as events proved, the most effective lobby that this state has seen for many years. They believed in organization and action. They did not hide their light under a bushel or under a milk can, but went to work. They were on the job all the while and never overlooked the main chance. That little classic,

"The lightning-bug is brilliant, but hasn't any mind;
It travels through the darkness with its headlight on behind."

could not and did not apply to them. Before the primary they approached or wrote to nearly every man who sought the legislative nomination. After the primary they continued their work and besought the successful nominees. As a result, when the legislature convened, out of 108 members elected to the House, they had over 70 positive pledges of support for their scheme. With this start they could not be blamed for feeling safe, but you know there is many a slip 'twixt a pre-election promise and a state appropriation bill passed and signed. Your association certainly found it so.

Your bill, as I rember it, proposed to appropriate $10,000 annually to promoting the dairying interests of this state by educational methods. As is customary, this bill was simultaneously introduced into both house and senate. In the house it struck a snag in the committee on appropriations, of which I had the honor to be chairman. In that committee it is the practice to recommend bills for passage or for indefinnite postponement by secret ballot, and when your bill came up, notwithstanding the pledges made in its favor and notwithstanding an eloquent plea made for it by Representative Klay, on a vote it received the broad axe on its tender neck, and was ordered reported back to the house for indefinite postponement. This was about 5 o'clock p. m. They say that bad news travels fast. It seemed to in this case. It was my duty, as chairman of the committee, to report the bill for indefinite postponement in the house at its next session. When I entered the house chamber the next morning I was met by a distinguished delegation who looked like Wall street magnates, but who introduced themselves as dairymen. They were looking after this bill. They asked me to stretch my authority to let the bill go back to the committee, there to receive further consideration and to get the benefit of another vote. Now while I favored the bill I was not altogether impressed with the bright scheme. Your committee was headed by a gentleman by the name of Marsh, who I believe manufactures a creamery specialty in a town up north of here, the name of which I do not now recall. Mr. Marsh is a very plain talker. His language to me was pointed and direct; in fact, it was much more pointed than diplomatic. We were not progressing rapidly toward an agreement until a quiet, scholarly looking gentleman, whose name I do not even now know, and who up to this time had said nothing, interposed and poured oil, or perhaps cream, upon the troubled waters. As a result, we speedily came to an understanding. My report was held up until a minority report could be prepared. Both reports were presented to the house at the same time, and on a vote the minority favoring the appropriation was substituted for the majority and in due time your bill was passed by the house by a good safe vote. The bill passed the senate. How and when I do not remember.

Your association received the only appropriation made during the session for a special interest. While, as a general thing, I believe it to be bad policy for a state to appropriate money to be expended by societies or associations not directly connected by law with the state institutins, I felt that we could in this case, make an exception. It seemed particularly proper to give you this special consideration when we remember that the milk cow and the creamery have done more than any other two things to place the farmer of the west on a cash basis and change him from a petty borrower for six months in the year into a prosperous bank depositor with a good account.

Let me say to you that your success was largely due to your well organized pre-election campaign and to your excellent legislative committee. You should appreciate the work of that committee, for they did their work well, and as a general thing the job of a lobbyist is a thankless one. They are a good deal like the boy hoeing in a corn field. A passing stranger asked him what he received for his work. He said: "Nothing if I do and the devil if I don't."

You have received this appropriation, but with the word "annual" cut out. I am responsible for the absence of that word. It was eliminated for the good of the measure, for the good of the work, and for the good of your association, and let me tell you why. You have received $10,000 to spend. Spend it wisely and well, and you will then have established for yourselves a credit and a record. You can go back to the next and to succeeding legislatures and demand a continuing appropriation and receive what is your right and your just due. But let me warn yon. You must not permit a dollar of that appropriation to be spent foolishly or extravagantly of for an unauthorized purpose. If you do you will damn your cause with future legislatures and you will close the doors of the state treasury against your requests, no matter how just and how proper your claims may be. I thank you.

President: Mr. Moore has told you that he has two cows. Now he is not the only one that we will have talk to us who keeps cows. We have Governor Carroll. He has a cow and is credited with milking her himself. I want to say that he has been a very warm friend of ours all through this struggle. We have in him a good friend.

ADDRESS.

GOV. B. F. CARROLL, DES MOINES, IOWA.

Mr. Chairman, Ladies and Gentlemen: I do not know that I shall be able to say anything to you that will broaden the scope of your knowledge very much with reference to dairying. I came rather to meet you and greet you and to say to you that the state is interested in the industry that you are engaged in. I have been very much pleased and delighted to see the exhibits that you have here. I am certain that it means much to you men to come together this way, even if you did nothing but visit.

Mr. Moore has told you the history of the legislation which brought to you an appropriation made by the state for the purpose of encouraging and helping you in your work. It is rather an unusual thing for a state to legislate money into the hands of an association or the officers of an association where these offices are not created by and under the direction of the state. Although we have for some time been making preparations for county agricultural societies and for the carrying on of institute work, both of which in a general sense are agricultural, we determined to make at least a small appropriation to help you in your work. Whether the legislature will feel like repeating that appropriation will, of course, depend on yourselves and how you have used the appropriation, and the tenor of my remarks in my message to the next legislature will depend upon your report.

The dairy interest which you represent is one of the greatest interests in the state. There is no question about that. Mr. Wright, our dairy and food commissioner, has just filed with me his annual report, and I have been studying it a little because I expected to come here and because I wanted to know something about it. There are some things in that report which, it seems to me, I ought to bring to your attention. We have something like 1,363,000 milk cows in the state, and I don't know whether the number is increasing or decreasing. Mr. Wright's report shows that the creameries turned out about 102,000.000 pounds of butter last year; the total butter production was about 170,000,000 pounds, or about two and a half pounds of butter yer cow per week. If by increasing the amount of butter per animal that is now produced renders us any profit whatever, practically every pound you can add to this is clear gain. It may take a little extra feeding, but it is practically all profit. If it could be brought up to six pounds per week I think at least two and one-half pounds would be clear profit. Is it not possible to improve our dairy herds so as to get more butter from our cows?

I am not in a position to criticize your methods, but I often wonder if you are looking at this question in a broad enough light. Last year we produced more than three hundred million bushels of corn in the state of Iowa. It is a great compliment to the soil of this state, but I am not sure it shows the greatest wisdom. May we not be running too much in one rut? Are we not paying too much attention to the raising of corn? It is not the greatest thing to say we raised more bushels of corn this year than last year unless we raised it on less ground. The business of dairying serves to keep the things which improve the soil in the soil.

I was glad that the man who just read the paper by, Prof McKay, made reference to the fact that there are very few silos in this state. When I travel through the Northeastern portions of the United States and up into Canada I see 50 silos to where you see one or where you see none in Iowa. It must mean something. It means that these people must know that there is some benefit and some advantage in having silage over the way we are feeding now. It is one of the things I think you ought to study.

I am trying to work up a little sentiment on another line and I know of no people more interested in it than you dairymen—the question of good roads. It means you can get your cream to your factories cheaper and better if we have better roads. This means that your profits will be larger and therefore you can pay more profits to the farmer. I don't know just how we are going to bring good roads to Iowa, but I believe it should be done by using the supplies we have at hand. I was talking with the governor of New Hampshire recently and he told me that they were building miles of macadam roads there, and that they were getting their stone from Massachusetts and shipping it into the state for the purpose of making roads. He said they had some in New Hampshire, but they could get it cheaper and better from Massachusetts. If this can be done in Iowa I think it would be a good plan, but I believe there is plenty of good stone in Iowa, and I believe at least some of it should be on the roads in the shape of macadam.

I had a talk with a road enthusiast a short time ago who suggested this idea to me. We have an appropriation to levy a four-mill road tax. He advised taking a certain percentage of that and set it aside to be used for dragging the roads everywhere after every rain. He said it could be done for six or seven dollars a year per mile. I was talking with ex-Governor Larrabee a few days ago and he said he thought that was too high. He investigated a piece of road that is being kept in shape near his home at Clermont and wrote me that eleven hours' work per year has served to keep that road in condition. If we can put our roads in shape on three mills on the dollar and keep them in shape on one mill on the dollar, it would certainly be an improvement worth while. The soil is such that it is more difficult to keep roads good than in most other places, yet I believe that we can get a good deal better results out of the appropriation and taxes than we are getting now.

It seems to me that those things which are most attractive to a boy or girl by way of rural entertainment have passed out of existence and our country people are catching on to city ways. I think that is a mistake. We are talking about keeping the boy on the farm. If we are keeping the right boy on the farm that is the thing to do. Not every boy, however, born on the farm will make a good farmer; some of them are not good for anything. If you have a boy who will stay on the farm that is the best place in the world to keep him.

But listen here. While you are keeping the boys on the farm, keep the girls on the farm with them. You don't want to go to town to get a girl for a housewife on the farm. When a boy has grown up on the farm he has absorbed his knowledge—if his father is any good—and if he starts in on something else he has lost that knowledge and not only that but the community has lost it. I said to one of the Ames professors, "How many of these boys who take the courses will go back to the farm,, as I have heard it said that when you send a boy away to educate him you educate him away from the farm?" He said that fully 85 per cent of these boys go back to the farm. They are going back and educating their fathers. You send one of your boys to Ames and give him an education along any line pertaining to agriculture and he is going back and disseminate a great deal of knowledge in the community where he is located. If John Smith sends his boy to college, send your boy along with him.

Don't try to own all the land that borders on your land. It is against the laws of nature, and you have no business with it. You don't need three hundred and twenty acres of land in Iowa. Give a part of it to the boy and keep him at home. Don't set him up as a poor excuse for a lawyer or a doctor, but keep him at home to raise a family.

How are you going to keep the girl at home? How much money did you make off your cows last year? Don't try to put all that money into big barns. Good buildings and improvements for the stock are, of course, necessary, but put some comforts into the home to induce the girl to stay there. Henry Wallace said at Des Moines last week that if he were a housewife and the husband would not put hot and cold water in the house he would put a tent in the yard and stay there until he did put it in. There is not a class of people in the state of Iowa better able to have good homes than the farmers. He has an income big enough to take care of him. The farmer may rob himself by failing to farm properly, but you can't rob him of his farm if he has it paid for. There is no man in the state that ought to have a more comfortable home than the farmer, and the best way I know to keep the boy and girl on the farm is to furnish them a home that they will want to stay in. You can have gas and hot and cold water and a furnace in your house. It is a source of great pride to ride over the state and see the magnificent homes, but you can make them better. And if you make them better you are going to keep the children at home.

I don't know of any one industry in the state that is more important or more profitable than the dairy interests of the state. You can just as well double the production of butter in this state as not, and you ought to do it. In order to do that we must do one of two things; we must vastly increase the number of cows or increase the quality of the animal. Which would be the easier and most profitable? We have been talking of making two ears of corn grow where one used to grow, but it is not always profitable to pasture two cows where one cow should be pastured. It is profitable to get a cow to give two pounds of butter-fat rather than one. You ought to teach the farmers that if a cow is not profitable to send her to the slaughter house and put in her place a cow that will produce enough butter-fat to be profitable.

The reason that our cattle are not producing more butter is because one-half of them are poor cattle. It will not take any more grain or more care to feed a good cow than a poor one. I want to say to you that I am going to watch with more interest next year than I have in the past the progress that is being made along the lines that you are working for, for two reasons—because I want to know about it, and because I live here and am interested in it. And then I want to know whether you were correct when you said, "if you will give us an appropriation we will produce more butter." I want to see if that is so. I have no doubt but what you folks get great good out of getting together. I am interested in it because I believe that the time is coming when we must resort to something more profitable than simply plowing corn.

I think I am correct in saying that every country as it grows older has the same experience—that the lands of the country grow more valuable. There has been a great tide of emigration from Iowa, so that our farm population is actually decreasing. The time is coming when that tide of, shall I say migration, is going to stop. When these lands become more valuable the thing is going to work back on us and we have to resort to something more profitable than simply tilling the soil. I don't know of anything better than dairying.

I want to say in behalf of this association that Cedar Rapids always does things right, and I have no doubt you folks are going away well satisfied. It is one of our most delightful cities. Cedar Rapids has the ability to take care of a dairy convention, a political convention or anything else that comes along, and do it right. I thank you.

Adjournment.

FRIDAY MORNING.

Friday forenoon was spent in Machinery Hall. The cow demonstration by Prof. Van Pelt attracted much interest. The professor passed from cow to cow among the herd in the basement of the Auditorium, pointing out the strong and weak points and otherwise instructing the interested farmers on the care, feeding and breeding of dairy cows. This was a new feature and proved such a success that it will doubtless become a regular number on future programs.

The convention butter was sold to Gude Brothers, of New York, by Auctioneer Frank M. Brown for 31c f. o. b. Cedar Rapids.

MACHINERY HALL.

Every available space in the auditorium was devoted to the exhibit of machinery. The following firms were represented: J. G. Cherry Co.; Jensen Manufacturing Company, Topeka, Kan.; J. B. Ford Co., Wyandotte, Mich.; Torsion Balance Co., New York; Wells & Richardson Co., Burlington, Vt.; Chr. Hansen's Laboratory, Little Falls, N. Y.; International Salt Co., Milwaukee; Elov Ericsson, St. Paul; Worcester Salt Co., New York; Diamond Crystal Salt Co., St. Clair, Mich.; International Harvester Company of America, Chicago; Creamery Package Manufacturing Company, Chicago; Iowa Dairy Separator Company, Waterloo, Iowa; Sharples Separator Company, West Chester, Pa.; DeLaval Separator Company, New York; Vermont Farm Machine Company, Bellows Falls, Vt.

In the Vegetable Division, 1909 Fair

PART IX.

EXTRACTS FROM

STATE DAIRY COMMISSIONER'S REPORT OF 1909.

TWENTY-THIRD ANNUAL

H. R. WRIGHT, Commissioner.

The law creating the office of Dairy Commissioner requires an annual report to the Governor of the state covering the dairy business of the state. Later enactments make this department responsible for the enforcement of the following laws:

PURE FOOD LAW.
PAINT AND LINSEED OIL LAWS.
CONCENTRATED FEEDING STUFFS LAW.
CONDIMENTAL STOCK FOOD LAW.
AGRICULAURAL SEEDS LAW.

The foregoing statement of expenses of this department includes all the salary and expenses of the commissioner and the deputy, and salaries of clerks, though only a minor portion of their time and services can be devoted to the work or connected with the dairy business. The law authorizing the employment of inspectors under the pure food law and providing for their compensation specifies the duties that they shall perform, their services are authorized for the specific purposes of the food law. On the other hand the dairy assistants could often do valuable work along the other lines but their time is more than occupied with the creameries. It is recommended that future legislation should authorize the employment of a certain number of inspectors, all to be paid from the same fund and to perform any of the duties of the department. The food law was passed at a time when the situation in the state was particularly bad as regards the foods then on the market and it was certain that an enormous amount of work was necessary at once. Inspectors were appointed in exact accordance with the letter of the law and devote themselves exclusively to the enforcement of the food law, including the statute relating to oleomargarine. Later the other laws mentioned above were added to the duties already imposed. The commissioner has preferred to act in exact accord with the statute and leave it to future sessions of the legislature to change the statutes if such change is deemed wise, and not to try to change them by a strained construction placed upon them.

In the report of a year ago attention was called to the desirability of additional help for the dairy work in this state but by reason of the efforts of the State Dairy Association to get an appropriation it was not thought advisable to press such recommendation to the attention of the general assembly.

The law passed appropriating money to a board of seven, of which the executive officers of the State Dairy Association make four, and the director of the Experiment Station, the Professor of Dairying and the State Dairy Commissioner the others, is given elsewhere in this report. The laws under which the assistant dairy commissioners were appointed were intended to affect mainly the creameries and then indirectly their patrons. The new law is evidently intended to touch the producer of milk and cream and the board has responded to this idea by selecting for the work Mr. H. G. Van Pelt, a dairy expert rather than a creamery expert. This work ought to have the warm support of every dairyman in the state and of course every creamerymen as well.

The one marked feature of dairy development during the last twelve months is the fact that there is an immense increase in the interest in dairy bred cattle. While for years the dual purpose cow has been the choice of most Iowa dairymen, there is now a considerable change of sentiment and an increasing interest in the securing of better cows of whatever breed, and a real increase also of the desire for special purpose dairy cows. It is not too much to foresee that that interest will increase and that it will make for a very considerable permanent addition to the dairy industry of the state. So long as the average production per cow is about 140 pounds of butter per annum, there is quite evidently great room for improvement and the future looks promising in every respect, and particularly in the direction of improving the dairy cows of the state. In this work the State Dairy Expert will necessarily be a great factor and the State Dairy Association will be charged with great responsibility and will have great opportunity for advancing the interest which it represents.

Both the central creameries and the local creameries report improvement in the quality of the cream received, a report which is strengthened by the reports from the butter markets of the improvement in the quality of butter received. There is no special or particular reason that can be alleged for this improvement except that nearly everyone has been making efforts for the improvement of the raw material that comes to our creameries of various kinds, and during this year the effect of those efforts has been sufficient in amount to attract attention. The railroads also report a smaller number of cans of cream sufficiently sour and yeasty to boil over in transit. The commissioner, while not at all minimizing the necessity for very great improvement in the quality of milk and cream, does not believe that the quality of milk or cream was ever generally or uniformly objectionable. Too many people give too great weight to occasional situations and find it easier to see the objectionable side of things than that side which is the best and most desirable. In the nature of things this must have been true in the creamery business because the proportion of butter made that is above a moderate score has always been very considerable. Nor is the common excuse a good one that says the cream at a creamery cannot be improved because if rejected the patron simply goes elsewhere and no good is effected. A circular letter sent to the local creameries of the state brought 139 answers. Two of the questions were, "Have you been obliged to reject any cream on account of its bad quality?" and "Have you lost any patrons because of rejection of their bad and unwholesome cream?" To the first question 103 answered that bad cream had been refused at their creameries, of which 45 had lost patrons thereby, but the small amount of cream rejected and the small number of patrons affected is shown by the fact that of the 45 creameries that had lost patrons, one lost 20, another 11, another 7, and most of them but one or two. This seems to indicate that while patrons were lost by the practice the number so lost was negligible in the ordinary creamery. It is believed that the manager and buttermaker can, if they use sufficient vigor and tact control the delivery of milk and cream. At any rate there are plenty of creameries where they are doing it successfully, the advancement of quality reported seems to indicate that such success is more general than heretofore admitted. But there is still great need for continued effort on the part of the creamery management to improve the quality of their product.

Some effort was made to interest the legislature in some remedial legislation, or that which would make more definite the criminal laws now on the statute books relative to selling to a creamery milk or cream that is unwholesome or filthy but nothing was seriously considered. It is not at all probable that any legislature will enact a law that will enable a state official to have a patron fined for delivering cream that is simply not the best, and the law we have now is strong enough for food products. There is a wide difference between cream that is unwholesome and that which is the ideal of the buttermaker. The cream may be too sour, or have bad flavors or odors or the cans may not be ideally clean and the cream still not unwholesome in the sense that it would make anyone sick or that it is dirty or filthy. Such cream would be undesirable but it is too much to believe that the general assembly will ever make it a criminal offense for a farmer to bring such cream to the factory. The improvement of quality must be done by the creamery managers, and by the buttermakers, through education and instruction and refusal to take that which does not meet the approval of the management. Fines and penalties will be reserved for those who bring cream that is decomposed or filthy.

A group of creameries, most of them in Worth county, have organized for the purpose of employing an expert, who is to go among the creameries and their patrons and work for quality of raw material, increase in quantity of it, the use of better methods of caring for and feeding cows, and in general the upbuilding of the dairy industry so far as it is connected with the ten or twelve creameries in the organization. The expense will probably be about five or six cents a tub of butter and the results and advantages will far outweigh that small expense. The success of this movement will be watched with great satisfaction and there will doubtless be many other such organizations in the near future. Theoretically this movement is in the right direction. The creameries of this state may expect the state to enforce laws, to assist in education and to generally encourage the creamery and dairy business, but it cannot be expected that the state will do that which patrons and to assist them not only in producing the very best quality of milk, but also to assist them in producing increased quantities of it and such policy has been found uniformly successful. There seems no reason to suppose that the same policy vigorously carried out will not very greatly improve bath the quality and the quantity of the milk and cream produced.

Another bill which did not become a law was a bill providing authority for owners of cream cans registering a distinctive name or mark and providing penalty for the stealing of them or for their use by any one not their owner. The central creameries usually own the cans in which the cream is shipped and they report considerable losses of cans and considerable confusion arising from the use of their cans by unauthorized persons, sometimes for purposes other than transporting cream. It is evident that such losses must be borne by the producers whose products are handled and that to lessen such losses would be for the benefit of the producers as well as the manufacturer of the products. Such a law is already on the statute books to cover about all returnable containers except cream cans, and a cream can is the most expensive returnable container now used in this state. The bill was passed by the Senate but was lost on vote in the House. There are about forty creameries in this state that do a strictly centralizing business, that is, receive their cream largely from a distance by rail or other conveyance, and there are 77 others that receive more or less of their product by rail, so that such a statute as proposed would affect a considerable number of our creameries.

The statistical tables given elsewhere in this report show that the creamery butter manufactured in this state during the year ending July 1, 1909, amounts to 101,907,316 pounds, which was made from 413,000,000 pounds of milk and 279,000,000 pounds of cream—all of these figures being reported by 512 creameries. The creamery list shows a larger number than this, there being 29 skim stations in the state, the product of which is, of course, reported from their respective creameries. It is estimated that approximately 18,000,000 pounds of butter is made from milk and 83,000,000 pounds from cream. Of this butter the creameries report 10,380,497 pounds consumed at home and a little more than 90,000,000 shipped outside the state.

There are still 51 creameries in this state receiving nothing but whole milk and 135 creameries that receive both milk and cream and 357 creameries that receive nothing but cream, and the tendency seems to be rapidly in the direction of eliminating the whole milk system altogether in this state, as appears from figures given above. Only 17½ per cent of the creamery butter product is made from milk.

It is not possible to make any hard and fast definition of a centralizing creamery, for the reason that 117 creameries now receive some cream by rail. There are, however, 41 creameries in the state, which, in the opinion of the commisssioner, are properly classed as centralized creameries. They cover practically the whole area of the state with their cream agents and advertisements for business and they make from 150,000 to 5,000,000 pounds of butter each—an aggregate of 36,000,000 pounds. It follows that the strictly local creameries make 65,000,000 pounds per annum. The central creameries average 900,000 pounds each, and the local creameries average 140,000 each. More than half the creameries of the state are co-operative—292 being so listed by their managers and 78 creameries as stock companies, most of which operate on a co-operative basis. The number of individually owned creameries is 167, which includes the 41 centralized creameries mentioned above. There is one creamery at the Agricultural College at Ames which is state property and there are three condensed milk factories in the state at Waverly, West Liberty and Perry respectively.

Great pains have been taken to make the creamery list accurate and complete up to November 1, 1909. The statistics given are for the year ending July 1, 1909, and are as accurate as possible to be obtained. The number of creameries is approximately the same as last year, there having been few changes in the creamery list and those mainly due to the unavoidable errors in previous reports. The fact that so few changes have occurred seems to indicate that the causes for the closing of so many creameries which have heretofore operated in this state, seem no longer to be effective in closing the smaller creameries. It is also a fact that the relations existing between centralized creameries and local creameries are not so strained as heretofore and those interested in either of these systems are devoting their energies to the management of their respective businesses and the upbuilding of the buttermaking industry in Iowa in general. It is not too much to predict that at least in the immediate future the energies of the creamery people of the state will be devoted not to controversies among themselves but to the encouragement and development not only to butter making but the dairy interests in general.

FALSELY MANIPULATING THE BABCOCK TEST.

An extraordinary number of complaints have, during the past year, come to this department to the effect that operators of the Babcock test have been reading the test much higher than the facts warrant, and have by this means been obtaining business upon an unfair basis. Such complaints come to this office not only from managers of local creameries and from cream buyers in competition, but they also come from managers of centralized creameries who find their agents paying for much more butterfat than they receive. Such inaccuracies in testing may be due to lack of knowledge on the part of the operator of the test, but as a matter of fact most operators of the test are very well informed as to the method of its use and if they fail to get reasonably accurate results such failure is by reason of carelessness or of willful manipulation.

The theory of the statute providing penalty for willful and fraudulent manipulation of the Babcock test is that the operator of the test shall be held responsible for the results which he gets, and that if he does not get correct results it is because of intention on his part to make them wrong. Considerable work has been done investigating complaints of the kind referred to and several successful prosecutions have been undertaken, though very great difficulties stand in the way of inflicting penalties upon those who raise the test and hence pay for more butterfat than is delivered. One of the persons prosecuted was a cream hauler at Dumont. His duties were to go over certain routes and collect cream from various patrons on the routes and to sample cream so collected after weighing. It was discovered that the samples of cream delivered by certain persons always tested very high and that upon the whole day's collection there was very considerable shortage. Later it was ascertained that a certain delivery of cream actually tested less than 15 per cent, whereas the sample in possession of the cream hauler tested 41 per cent. The cream hauler was arrested and charged with falsely manipulating the Babcock test although he actually had nothing to do with the testing of the cream further than taking the sample, and was promptly fined $25.00 and costs. The persons whom he had favored and evidently who had conspired with him for this purpose reimbursed the creamery company $150 and further prosecutions were abandoned. Of course, the sampling of the cream is a necessary part of the operation of the Babcock test and as everybody knows may result in tests too high or tests too low at the pleasure of the one taking the sample. The suggestion is made that creameries employing cream haulers should check up their delivery in order to avoid not only exceptional cases of the kind above set forth but also to avoid carelessness on the part of the cream hauler.

The best interests of the dairy business will be served so far as the matter of testing is concerned when every test is accurately made. To raise the test when paying for a can of cream does not seem to most people to be very criminal. The cream agent who so raises the test takes money from his employer and gives it to the person to whom it does not belong and he does still greater injury to the dairy business as a whole because he arouses suspicion of the correctness of the Babcock method of determining the amount of butterfat present. There are many people in the state who decline to produce and sell cream because they are unable to believe that they are getting a square deal in the payment for the same. For these reasons, the statute provides the same penalty for the raising of the test as it does for the cutting of it.

The system of buying cream and permitting the buyer to sample and test it either at once or later is a system long established in this state. The employment of cream agents on the part of the central creameries is almost universally practiced and such has been the case for several years. There is no reason to suppose that any radical change is likely to occur in the manner of doing busi- eries. There should be every effort possible put forth on the part ness either on the part of the central creameries or the local cream- of creamery managers, buttermakers, cream purchasing agents, and others to insure perfect sampling and accurate and correct reports and payment for the butterfat present in every can of cream sold, and such practice will be for the benefit of the creamery manager, the producer of cream, and the dairy interests generally.

ANTI-DISCRIMINATION LAW.

Prior to the season of 1909, numerous complaints came to this department from local creameries alleging that outside competitors made a practice of temporarily offering for butterfat a price higher than that usually paid either by the local creamery of the price paid by the outside creamery elsewhere, and it was alleged that competition of this kind had succeeded in closing up a number of local creameries that would not have been so closed if competition had been on a fair basis. This condition was not found alone in Iowa, but in all the states where both local and centralized creameries were found.

The states of Wisconsin, Minnesota and South Dakota have statutes similar to the following Iowa law enacted by the legislature of 1909. The statute became effective July 4th of the current year:

CHAPTER 222, ACTS OF THE THIRTY-THIRD GENERAL ASSEMBLY.

Be it Enacted by the General Assembly of the State of Iowa:

Section 1. That the law as it appears in section five thousand twenty-eight-b (5028-b) of the Supplement to the Code, 1907, be amended by adding after the period at the end of said section the following.

Any person, firm, company, association or corporation, foreign or domestic, doing business in the State of Iowa and engaged in the business of buying milk, cream or butter fat for the purpose of manufacture or of buying poultry, eggs or grain for the purpose of sale or storage, that shall for the purpose of creating a monopoly or destroying the business of a competitor, discriminate between different sections, localities, communities, cities or towns of this state by purchasing such commodity or commodities at a higher price or rate in one section, locality, community, city or town than is paid for the same commodity by said person, firm, company, association or corporation in another section, locality, community, city or town, after making due allowance for the difference, if any, in the grade or quality, and in the actual cost of transportation from the point of purchase to the point of manufacture, sale or storage, shall be deemed guilty of unfair discrimination which is hereby prohibited and declared to be unlawful; but prices made to meet competition in such locality shall not be in violation of this act, and any person, firm, company, association or corporation or any officer, agent, receiver or member of any such firm, company, association or corporation found guilty of unfair discrimination as defined herein, shall be punished as provided in section five thousand twenty-eight-c (5028-c) of the Supplement to the Code, 1907.

The penalty fixed in section five thousand and twenty-eight-c (5028-c) is a fine of not less than $500 nor more than $5,000, or imprisonment in the county jail not to exceed one year or both penalties.

In order that the statute might be better understood a circular letter as follows was sent to the manager of every creamery in the state about August first:

SIR:

I am in receipt of your communication of the 3d inst., requesting an interpretation of Chapter 222, Acts of the Thirty-third General Assembly which amends section 5028-b of the Supplement to the Code, 1907, relating to unfair discrimination. You request to be advised specifically:

1. As to whether the Act requires a purchaser of cream to pay the same price to all persons throughout the state on the same day.

2. In the case of a cream purchasing agent, buying cream in the locality where there is a local creamery, is the cream purchasing agent permitted to pay a higher price in that locality than is paid by his employer elsewhere, and if so to what extent?

3. If the purchaser raises the test on butter fat above what is actually shown by the test would this constitute a violation of the Act?

4. Is the Food and Dairy Department charged with any responsibility in the enforcement of this statute?

1 and 2. Your first and second questions are so closely related that they may be answered jointly.

The purpose of the Act was to prohibit any person, firm, company, association or corporation doing business in this state and engaged in the business of buying milk, cream or butter fat for the purpose of manufacture, or of buying poultry, eggs or grain for the purpose of sale or storage from destroying the business of a competitor or creating a monopoly by paying different prices in different parts of the state for the same grade and quality of the article purchased after making due allowance for the difference in transportation from the point of purchase to the point of manufacture,sale or storage. The thing prohibited by the Act is the discrimination in price for an illegal purpose, viz: For the destroying of competition or the creating of a monopoly. The Act itself, however, permits the paying of a different price in one place than is paid generally by the same person at different points throughout the state, provided the change in price is made in good faith to meet competition in a particular locality.

3. The payment of a different price than that generally paid throughout the state for the same article, considering the difference in cost of transportation, by the indirect method of fraudulently reading the butter fat test is as clearly illegal and a violation of the Act as though a different price were paid in the regular way, provided that this is done for the purpose of destroying the business of a competitor or creating a monopoly.

4. The enforcement of this act is by section 5028-e of the Supplement to the Code, 1907, especially enjoined upon the county attorney and the attorney general.

I conclude therefore, that the only duty incumbent upon you in reference to this Act is that which necessarily results from the nature of the Act and its relation to your department.

Considering that complaints for violation of this act will constantly be presented to your department, I suggest that you refer all such complaints to the county attorney of the county where the law is violated, and also to the department of justice.

June 4, 1909.

H. W. BYERS,
Attorney General.

H. R. WRIGHT,
State Food and Dairy Commissioner.

It must be noted that the enforcement of this statute is by law imposed upon the county attorneys of the respective counties and the attorney general, and that complaints of its violation should be properly addressed to these officials. The state also has laws requiring the county officers to investigate complaints and prosecute offenders.

The impression that the law is intended to destroy or prevent competition is entirely unwarranted. The impression that the statute prohibits absolutely a creamery from paying different prices to different individuals is not correct. Careful reading of the letter of the attorney general is invited on this point. For example, if a local creamery's price on butterfat is 25 cents and that of an outside creamery at other points is 20 cents, it is manifest that a law prohibiting the outside creamery from paying more than 20 cents at the local point would wholly destroy competition between the two, and competition having been destroyed a local monopoly would be created. No courts anywhere have sustained statutes resulting in monopoly, or which destroy competition. So that a statute specifically requiring the central creamery to pay the same price for all its products would be clearly unconstitutional—a fact pointed out by the best lawyers in the state when the bill was considered in the legislature. It, therefore, follows that the outside creamery may come into the territory of the local creamery and compete with the local creamery, that is, pay as much for butterfat as the price paid by the local creamery.

Numerous complaints come to this office that outside creameries are paying more near the local creamery than the outside creamery pays at home, but we have not received any complaints during the last several months, which would indicate a violation of the statute. While there is still friction between the two competing systems it is believed that at least the existence of the statute has done considerable good. A local creamery can in every case, by giving better service, easily compete with an outside creamery when the outside firm is prohibited by law from paying more than the standards set by the prices of the local concern. At any rate, the complaints that the centralizers were running the local creamery out of business have practically ceased in this state and I believe the same is the fact in other states.

OLEOMARGARINE.

The following statistics of the manufacture of oleomargarine for the several years ending in each case on June 30th, are from the reports of the Collector of Internal Revenue for the United States:

1901	104,943,856
1902	126,316,472
1903	71,804,102
1904	48,071,480
1905	49,880,982
1906	53,146,459
1907	68,988,639
1908	79,107,273
1909	90,621,844

Until 1902 the sale of oleomargarine was under little or no restriction so far as the federal government was concerned except that all oleomargarine paid a tax of two cents a pound and the manufacturers and retailers each paid license fees. From the figures it will appear that the amount of this product manufactured and sold in this country for the year 1902 was more than the total creamery butter production of the state of Iowa by 25,000,000 pounds, and as practically every pound of it was sold for butter the influence upon the markets can well be estimated. Under the present oleomargarine law, which levies a ten cent tax upon oleomargarine that is colored and only a quarter of a cent upon uncolored, the make of the product immediately fell to less than half the former proportions but has steadily increased under a campaign of advertising and effort on the part of the makers, until the amount again approaches 100,000,000 pounds annually.

When the law was first enacted "uncolored" oleomargarine was nearly white, or of a very light straw color. There is now found on the market oleomargarine, sold as "uncolored" under the quarter cent tax, which has a high yellow color, and would pass unquestioned as butter in any market, so far as color is concerned.

This state has a law which prohibits the sale of oleomargarine "having a yellow color," whether it derives that color from its ingredients or from some artificial source. The Supreme Court, in the case *State vs. Armour Packing Co.*, in the following words, which were the instructions of the trial judge, interprets this phrase:

> You will observe that the change in the indictment is not for coloring imitation butter, nor for selling it without it being marked as required, but it is for unlawfully selling it, it having a yellow color. The statute as applied to this charge prohibits the selling of imitation butter, or substitute for butter, having a yellow color. The words "yellow color" here used means the natural yellow color of butter made from milk, or cream of cows, without any coloring matter having been added thereto. If you find that the defendant sold the firkin and its contents * * * and if you find that the substance is a substitute for butter, you will then determine whether or not it is of a yellow color, as herein defined to you; and this you will determine from your own knowledge, experience or observation, whether the contents of the firkin of imitation butter or substitute for butter in evidence is of a yellow color—that is, of a natural color of butter made from milk or cream from cows.
>
> Commenting the Supreme Court says further: The question propounded to the expert as to whether the substance sold bore the yellow color of true butter was not a matter of expert evidence. The law was not enacted for experts but for the common people, who might be deceived by the appearance of the substitute. Moreover, the product itself was introduced in evidence, and was before the jury. Every one is presumed to know the color of an article which is in such general use as butter, and as to whether or not an article intended as a substitute therefor bears the yellow color of true butter. Liability to fraud and deceit was the fundamental thought in the minds of the legislature.

From the foregoing it will be seen that there is still much "uncolored" oleomargarine which nevertheless is of such a shade of yellow as to resemble butter and that the sale of it violates the law of this state. Further that the question of the depth of the shade permitted to be used in oleomargarine is only that which does not permit the product to have the yellow color of any butter that might be made from milk or cream of cows.

Heretofore the makers of oleomargarine have sent into this state a product that is nearly or quite white but each year the product increases a little in yellow shade, apparently, and every year there is a considerable amount of oleomargarine found in this state that is of a high yellow color. The attempt seems to be to get the highest possible shade of yellow color and still escape prosecution. While not a great deal of work in the way of prosecutions has been done it is evident that but for the possibility of such prosecution many dealers would sell the highest shade of yellow oleomargarine that they could secure.

The manufacturers of oleomargarine are this year making a vigorous campaign for the further sale of this product. Notwithstanding the fact that all materials from which oleomargarine is made have increased in price yet the finished product is this year sold for less than it was a year ago, and therefore more dealers have been induced to take out retailers' license and start handling the substitute product.

It is quite evident that an attempt is being made to introduce the product wherever possible and that a low price is to be the attraction. The high price of butter and the low price that is being made on oleomargarine are evidently depended upon to still further increase the sales of the substitute product this winter.

Oleomargarine does not compete with butter, but it takes the place of butter nevertheless. While the makers sometimes advertise it as a better article than butter, no real attempt has been made to compete with butter on any such grounds. It is distinchly a substitute for the real article and not a competitor in the strict sense. It is a substitute for butter in another sense, that is it is too often served in restaurants and hotels in the place of butter and so takes the place of butter by fraud and deception.

It is probable that some new attempt may be made this winter in Congress to repeal or amend the present oleomargarine statute wrich places a ten cent tax on the colored variety and the creamery and dairy people of this state should be aroused and watchful in their own interests. The manufacturers of oleomargarine are few in number but represent powerful and rich corporations. They are fully organized and have immense sums of money at their disposal for the purpose of presenting their claims to Congress. The dairymen of the country, on the other hand, while several millions in number, are but little organized and their influence cannot be quickly and easily made effective. It therefore becomes necessary for every friend of the dairy industry to be active in the support of those who devote their energies to dealing with the oleomargarine question. The National Dairy Union, which secured the passage of the present law, is now as heretofore officered by men whose every purpose is unselfish and who may be depended upon to look after the interests of the dairymen in Congress, provided only they have the support of the rest of us so that their efforts may be effective. The situation is full of possibilities disastrous to the dairy interests of the country, and every support ought to be given to the organization that for so long has given faithful leadership to the butter making interests of the country.

FREIGHT RATES ON BUTTER.

During the last winter a petition of carload shippers was presented to the Western Classification Committee praying a substantial reduction of the carload rate upon butter, eggs and dressed poultry, from Chicago to New York and the seaboard generally. It appears that the Western Classification Committee acts as an advisory committee to the Central Freight Association in New York, which latter association actually has authority over such rates, and in such capacity they advised that, instead of the decrease in the carload rate, an increase should be put in force affecting the rates on shipments in less than carload amounts.

As is well known the western roads all run refrigerator cars once or twice a week over their lines and pick up the shipments of butter made by the smaller creameries until the car is loaded to its capacity. However, if a shipper has as much as 10,000 pounds he may secure a refrigerator car, ice it at his own expense, and have the exclusive use of that car for his shipment to the point of destinotion. All such shipments that are east bound, whether large or small, center in Chicago, and are there turned over to the lines whose representatives are familiar to every creamery of the state. The freight rates upon such shipments are composed of the rate from the point of origin to Chicago, and the rate from Chicago to the seaboard, principally, of course New York City. Upon all shipments, whether a carload of the minimum of 10,000 pounds or larger, or the smaller shipments of 100 or 50 or 10 tubs the rate from Chicago to the Atlantic coast is at present 65 cents per hundred pounds. This is, the car load shipper has no advantage in freight rate over his smaller competitor so far as the rate from Chicago to the east is concerned. The petition asked that the car load shipper be given an advantage of ten cents a hundred pounds by lowering the rate which he should pay, and the answer made by the Western Classification Committee was to recommend that the car load shipper be given this advantage, but by an increase of the rate of his competitor, the less than car load shipper since about 60,000,000 pounds of butter is annually shipped from this state to New York City and other cities in the east, and since this amount of butter ready to ship will weigh gross about 70,000,000 pounds, it will readily be understood that such an increase of rate would in- than car loads by about $70,000 with a similar increase for other western butter producing states. And this charge would fall wholly upon the producer of this butter for the reason that no increase in crease the freight charges upon butter annually shipped in less the price received for the butter could be hoped for while the carload shipper could put his butter on the market for less expense.

By authority of the Executive Council of the state the dairy commissioner has twice appeared before the Central Freight Association in New York City and made vigorous protest against the increase of rate proposed. The Secretary of the National Creamery Buttermakers' Association and representatives of other states and of the Chicago and New York butter markets have been active in like manner. Final consideration of the matter has been put over from time to time by the Central Freight Association and it is now deferred until April 1, 1910. Such action seems to indicate that there is still probability that the rate will be increased unless further action is taken by the western creameries and it is therefore recommended that managers of each creamery of this state write a letter of protest to both the Chicago and New York agents of the line patronized by his creamery.

The rate of 65 cents per hundred upon butter shipments from Chicago to the east was established so long ago that no one now is able to tell when it was first put in. At any rate it was established when the cost of railroad service was much greateh than now, when refrigerator cars were small and expensively iced. The rates which our western creameries have paid for years have added to the profits of the various transportation companies, have helped to improve their road beds, and double track their roads and to enlarge their equipment so that now their cost of service must necessarily be less than it was twenty-five or thirty years ago. Yet we not only still pay the same rate as thirty years ago but it is now proposed to raise that rate more than fifteen per cent, or $70,000 in the aggregate. It is impossible to believe that the rate of 65 cents is not renumerative to the railroad companies, because they have voluntarily put into effect a minimum of 10,000 pounds and upon such a shipment their earnings per car would be but $65 between

Chicago and New York. But less than carload shipments are aggregated together in Chicago and cars go forward carrying more than 30,000 pounds each, upon which their earnings are $195 per car, less the cost of reloading at Chicago, which cost is probably less than $10 per car. The 10,000 pound minimum was established because that is approximately the weight of a single tier of tubs of butter in the car. The less than carload shipments are reloaded by the employes of the eastern roads, and the cars invariably carry three tiers of tubs, and sometimes four or more. If the income of $65 per car for icing and hauling from Chicago to the east were not a renumerative rate, the roads would long ago have raised the minimum and so compelled the shipper to load more heavily, especially as the cars are made to carry as high as 60,000 pounds each. But the minimum has not been changed and it seems to have been left low purposely to encourage the smaller shipments in carloads.

There seems to be on the part of some railroad representatives and also upon the part of some of the carload shippers a theory that the large shipper has an inherent right to have his products carried to market for less money than that paid for similar service by his smaller competitor. That is, because he is doing business on a large scale he should therefore be favored. A good many times rates are fixed on the basis of the "*value* of the service," which is only another way of saying that the rate is to be all the traffic will bear. Fortunately the Interstate Commerce Commission has again and again declared that rates must be established somewhat upon the "*cost* of the service." It is hardly possible that the cost of service upon a car that carries 30,000 pounds, can be very much greater than the cost to the company of transporting the same car the same distance with the same icing and carrying 10,000 pounds of the same product It is therefore hardly probable that in case appeal is made to the Interstate Commerce Commission a rate will be permitted which still further increases the disproportion between the income per car to the companies from the less than carloads, and that from carloads.

The creamery people of this state should between now and April 1, 1910, make the various refrigerator transportation lines of the east, to whom the L. C. L. shippers annually pay $500,000 in freight charges, understand that no increase in rates will be permitted until every method of protest is exhausted and that prompt and vigorous appeal to the Interstate Commerce Commission will be made in case such increase in rates is attempted. Indeed there is some reason to suppose that an appeal to the Interstate Commerce Commission for a substantial reduction of the eastern rate upon butter might be granted in view of the fact that the rate of almost every other product has been reduced in the last ten or twenty years, and in view of the further fact that the rate on dressed meat, the only other product that can be compared to butter, is but 45 cents per hundred, and has been for more than ten years.

The question of discrimination as between the carload and the less than carload shipper is of more importance than the mere difference of freight rate that each would pay. There exists now, as outlined above a real discrimination in favor of the carload shipper if we consider only the cost of the service to the railroads and their income from each of the two classes of shipments, but since the rate is the same they both get into the eastern markets at the same proportionate expense and hence go upon the market upon equal terms. But a real difference in the rates paid by two classes of shippers of the same product enables the one paying the less rate to monopolize the market. Indeed, a situation exists in the butter business which conclusively proves this contention. The price of butter upon the western coatsts of this country is always much higher than upon the eastern coast, yet small shipments of butter are never made west, for the reason that the less than carload rate is 30 per cent higher than the rate upon carloads. Only the shipper of carloads can get to the markets of the west, notwithstanding the attractive prices that may be offered.

THE PRICE OF BUTTER.

For more than a year a shortage of butter has been felt in the markets of the country and dairymen have congratulated themselves upon the relatively high price of butter. There is no disputing the fact that butter is short in quantity in this country nor that the price received for it is higher than heretofore for several years. The higher prices received by our creamery patrons for their butterfat is not wholly attributable to the market price for butter. A part of such increase in the price received by the farmer is due to the fact that our creameries are better managed than before, fewer losses occur and the expense of operation is therefore less than before and hence the income of the farmer per pound of fat is increased.

Nor is the price of butter a thing for special and particular congratulation for the farmer, for the reason that the value of everything he feeds his cows is increased in much greater proportion than the increase in the price received for his butterfat or his butter in the market. Pasture, corn, oats, hay, all the feeds that go to produce milk on the farm have very greatly increased in market value. On the other hand, hogs, cattle, sheep, which the farmer might produce with his feed instead of milk, have also very much increased. It is also true that grains, such as wheat, flx, barley, which the farmer might raise to sell, have very much increased in market value. That is to say, the farmer's increase of cost of feed is greater than his increase of income; or if he had turned his feeds into pork or beef or mutton he would have received a greater proportionate increase of return for his feed; or if he had raised grains to sell, his income would have been increased in greater proportion. It must be borne in mind that this comparison has nothing to do with the question of how he shall get the greatest aggregate income from his farm, but only shows that any slight increase in the price of butter is not to be pointed out as the only increase in farm products, but is only one of a dozen such increases in values of farm products, that the increase in the price received by the farmer for his butterfat is less in proportion than increase he has received from the sale of other farm products. A study of the following tables of butter prices, taken from the market reports, and the tables of prices of farm products, taken from the Year-book of the Department of Agriculture, will be of value.

SHOWING AVERAGE MONTHY PRICE OF EXTRA WESTERN CREAMERY BUTTER IN NEW YORK MARKET.

Month	Twelve months ending Nov. 1, 1998	Twelve months ending Nov. 1, 1899	Twelve months ending Nov. 1, 1900	Twelve months ending Nov. 1, 1901	Twelve months ending Nov. 1, 1902	Twelve mouths ending Nov. 1, 1903	Twelve months ending Nov. 1, 1904	Twelve months ending Nov. 1, 1905	Twelve months ending Nov. 1, 1906	Twelve months ending Nov. 1, 1907	Twelve montns ending Nov. 1, 1908	Twelve months ending Nov. 1, 1909
November	$.2325	$.2337	$.2600	$.2487	$.2412	$.2650	$.2317	$.2481	$.2350	$.2762	$.2725	$.2957
December	.2290	.2160	.2720	.2540	.2510	.2920	.2423	.2688	.2480	.3164	.2887	.3131
January	.2040	.1975	.2650	.2262	.2425	.2762	.2270	.2910	.2650	.3080	.3069	.3152
February	.2042	.2100	.2500	.2250	.2862	.2600	.2517	.3218	.2709	.3254	.3233	.3009
March	.1937	.2075	.2550	.2212	.2840	.2860	.2452	.2807	.2700	.3061	.2840	.2953
April	.1980	.1962	.1960	.2099	.2825	.2725	.2284	.3008	.2188	.3069	.2855	.2708
May	.1580	.1790	.2012	.1900	.2275	.2200	.2012	.2371	.2017	.2501	.2369	.2658
June	.1687	.1880	.1950	.1925	.2195	.2160	.1803	.2049	.2022	.2360	.2329	.2581
July	.1687	.1835	.1960	.1960	.2131	.2012	.1767	.2056	.2062	.2481	.2243	.2623
August	.1860	.2000	.2100	.2050	.1990	.1940	.1793	.2111	.2257	.2488	.2285	.2719
September	.2025	.2262	.2150	.2110	.2170	.2075	.1947	.2068	.2462	.2781	.2388	.3013
October	.2235	.2400	.2190	.2200	.2362	.2100	.2095	.2184	.2611	.2915	.2673	.3064
Average value per lb. per year	$.1971	$.206	$.2278	$.2165	$.2416	$.2417	$.2140	$.2487	$.2375	$.2826	$.2658	$.2880

AEVRAGE VALUES ON DECEMBER 1ST OF EACH YEAR.

	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Corn	$ .287	$ .303	$ .357	$ .605	$ .403	$ .423	$ .441	$ .412	$ .399	$ .516	$ .606
Oats	.255	.249	.258	.399	.307	.341	.313	.291	.317	.443	.472
Hay	6.00	7.27	8.89	10.01	9.06	9.08	8.72	8.52	10.37	11.68	8.98
Wheat	------	.584	.619	.624	.63	.695	.924	.748	.667	.874	.928
Hogs	4.40	5.00	6.20	7.03	7.78	6.15	5.99	6.18	7.62	6.05	6.55
Cows	29.66	31.60	30.00	29.23	30.21	29.21	27.44	29.44	31.00	30.67	32.36

ADULTERATED BUTTER.

The statute of this state makes eighty per cent the standard on butter, that is to say, butter containing less than eighty per cent butterfat is denominated "adulterated."

The Internal Revenue Department of the United States defines adulterated butter, among other things, as butter which has sixteen per cent or more of water, and upon adulterated butter there is a tax of ten cents a pound and a license fee of $600.00 for the manufacture. The Internal Revenue officials have authority to seize and detain any butter which seems to them suspicious, and if the analysis shows more than sixteen per cent of water the tax of ten cents a pound is assessed and the license fee of $600.00 is also assessed and a penalty of $300.00 is demanded. So far as known to this department efforts to escape penalties after they are once assessed have been practically useless. The year for which the license runs expires June 30th of each year and the license is demanded for the part of the year yet remaining at the rate of $600.00. Crameries in this state and in surrounding states have paid penalties ranging from several hundred dollars up to several thousand dollars. It is the policy of the Internal Revenue Department not to make public cases of this character but the Dairy Commissioner has personally investigated the records in the office of the Internal Revenue Collector at Dubuque and Burlington and find there listed the names of eight creameries that have paid penalties described above.

As heretofore several times pointed out in reports of this department and in circular letters, the only safe way for a creamery to operate is for the buttermaker to test every churning carefully and accurately and know how much water there is in it. The matter is of such importance that if the buttermaker fails to so test every churning his employer is warranted in discharging him without further notice.

The testing of butter for water is a matter that requires more skill, more care and more time than the testing of milk and cream with the Babcock test. The percentage of water in butter is not uniform in the various parts of most churns, nor is it uniform in all parts of a tub of butter. The government regulations for taking a sample of butter under the Internal Revenue Act follows:

> Hereafter in procuring these samples the use of the "butter trier" will be entirely abandoned. The quantity required from each package will be obtained from the top and bottom or side of the butter contained in the tubs by cutting a V or wedge shaped strip about two inches wide, one and one-half inches deep, and of sufficient length to make up the required weight of the sample, which must be approximately one pound. This can be accomplished by removing the butter from the tub. A V shaped strip of this character should be taken from each of opposite sides of the package of butter, or from both the top and the bottom of same, but it is regarded as sufficient if two such strips are obtained—that is, from the top and bottom in one case and from the two sides in the other instance. Butter put up in prints will be sampled by taking a one pound print from the box.

The foregoing is given to suggest a proper method of taking sample of butter for testing before shipment of same upon the market, in order to make sure that no butter leaves the creamery which has as much as 16 per cent of water.

CHEESE.

The manufacture of cheese in this state is extremely small, only about a half million pounds being manufactured in nine factories. The hand separator and the shipping of cream have superseded the cheese factory almost altogether in this state, though natural conditions have long since made it certain that cheese factories could not profitably exist in very many localities in competition with creameries, and there seems to be no reason to suppose that the future in cheese making in this state will be different from the past.

CITY MILK INSPECTION.

The growth of the city milk inspection in this state is indicated by the following table showing the number of permits for milk dealers issued in the years from 1896 to 1909. The years end in every case on the 4th of July:

	1896	1897	1898	1899	1900	1901	1902	190	1904	1905	1906	1907	1908	1909
Number	566	620	574	676	714	784	821	783	78	827	803	1006	1078	1149

Cities	Population	Inspectors
Burlington	25,318	Oscar C. Hoerr
Cedar Rapids	28,759	Dr. J. W. Griffith
Clinton	22,756	F. R. Allen
Council Bluffs	25,321	H. A. Lennox
Davenport	39,797	H. J. High
Des Moines	75,626	J. P. Morey
Dubuque	41,941	Dr. F. J. Kennedy
Fort Dodge	14,369	D. C. Benjamin
Keokuk	14,604	Arthur J. Anderson
Marshalltown	12,045	Dr. E. M. Singleton
Muscatine	15,087	Dr. John Tillie
Ottumwa	20,181	E. B. Hill
Sioux City	40,952	O. N. Hanson
Waterloo	18,071	Theo. Peek
Total	394,737	

Very considerable progress has been made in the cities listed above in the direction of sanitary milk. Some of the cities, notably Waterloo, Cedar Rapids, Dubuque and Marshalltown have adopted ordinances providing for city milk inspection at the expense and under the direction of the city council, and prohibiting the sale of milk except from cows that have been tested with the tuberculin test and shown to be free from tuberculosis. The last General Assembly declined to make any change in the statutes relating either to city milk inspection by this department or the statutes relating to the use of the tuberculin test. The commissioner regrets that the amoun of money and authority given to this department is not sufficient to insure the best quality of milk in the large cities of this state, and calls attention to this fact hoping that the city authorities will take such steps as may be proper to supplement the efforts of this department in this direction.

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER OF POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE AND POUNDS SOLD TO PATRONS AND OTHERS IN IOWA SO FAR AS REPORTED BY THE CREAMERIES.

Counties	Number Reporting	Pounds of Milk Received	Pounds fo Cream Received	Pounds of Butter Made	Pounds Sold to Patrons	Pounds Sold in Iowa
Adair	4	190,597	2,600,634	914,553	26,671	22,872
Adams	3		992,302	309,680	6,987	3,627
Allamakee	8		7,014,939	1,887,130	23,822	76,299
Appanoose						
Audubon	9	2,888,291	3,408,719	1,455,366	64,699	16,804
Benton	6	451,149	1,659,497	560,032	4,215	5,402
Black Hawk	15	32,957,432	2,453,552	2,164,881	162,214	516,483
Boone	4	2,458,993	529,643	291,300	10,280	17,563
Bremer	25	65,374,381	356,650	3,160,122	241,356	304,577
Buchanan	8	19,452,781	2,592,742	1,597,456	142,795	120,955
Buena Vista	5	104,152	3,062,902	911,070	22,709	59,446
Butler	16	24,249,053	2,404,661	2,010,089	147,899	203,239
Calhoun	5	956,284	6,092,156	2,002,231	13,278	20,658
Carroll	5	176,133	4,949,688	1,499,148	16,567	5,195
Cass	3		1,865,948	521,448	1,874	47,802
Cedar	3		654,231	206,683	3,753	80,295
Cerro Gordo	6	1,596,922	4,762.207	1,559,476	12,311	140,087
Cherokee	3	4,280	1,899,730	444,373	112,647	15,800
Chickasaw	13	24,969,926	4,327,170	2,243,699	171,161	64,393
Clarke						
Clay	7	2,925,476	2,694,052	1,002,753	49,346	23,890
Clayton	13	13,367,110	7,338,511	2,621,943	76,127	70,519
Clinton	4	1,851,481	3,745,377	1,199,751	10,175	33,196
Crawford	1		3,816,608	954,152		
Dallas	5	8,949.597	2,113,136	1,016,304	13,319	64,827
Davis						
Decatur	1					
Delaware	16	31,781,137	6,752,189	3,583,808	196,110	184,099
Des Moines						
Dickinson	5	268,706	1,596,031	509,740	20,903	32,737
Dubuque	16	10,633,649	11,322,412	4,008,371	88,559	371,806
Emmet	3	5,415,492	742,882	479,583	33,291	19,971
Fayette	21	51,253,367	5,012,497	3,748,323	249,450	235,877
Floyd	6	756,100	3,114,176	813,410	47,576	86,788
Franklin	6	1,807,496	3,170,484	1,075,604	35,906	48,837
Fremont						
Greene	1	453,891	240,398	106,127	1,666	4,840
Grundy	8	10,371,395	3,085,366	1,356,213	75,232	30,875
Guthrie	6	1,241,119	3,597,955	1,141,155	33,985	33,017
Hamilton	4	5,247,051	1,662,726	637,628	42,223	14,396
Hancock	7		3,604,161	1,085,290	38,259	16,886

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER OF POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE AND POUNDS SOLD TO PATRONS AND OTHERS IN IOWA SO FAR AS REPORTED BY CREAMERIES—CONTINUED.

Counties	Number Reporting	Pounds of Milk Received	Pounds of Cream Received	Pounds of Butter Made	Pounds Sold to Patrons	Pounds Sold in Iowa
Hardin	8	1,175,155	4,315,180	1,371,883	54,773	40,589
Harrison	----	------	------	------	------	------
Henry	----	------	------	------	------	------
Howard	7	5,305,681	3,847,766	1,208,712	35,110	14,670
Humboldt	7	1,569,355	2,517,202	842,961	40,052	10,074
Ida	1	------	494,117	157,931	1,379	------
Iowa	7	6,218,740	1,383,759	662,589	50,505	70,536
Jackson	11	4,232,053	5,982,934	2,215,644	31,667	88,139
Jasper	2	1,479,934	335,566	156,036	7,368	12,392
Jefferson	2	875,394	849,820	282,202	3,830	242,725
Johnson	----	------	------	------	------	------
Jones	11	4,249,188	14,058,425	4,246,617	133,188	30,558
Keokuk	1	------	606,500	152,000	------	------
Kossuth	19	9,059,077	5,539,452	2,098,414	167,719	65,342
Lee	1	------	2,652,077	902,631	------	45,000
Linn	11	5,777,402	6,375,546	2,317,557	52,246	499,657
Louisa		------	------	------	------	------
Lucas		------	------	------	------	------
Lyon	3	------	1,720,062	575,946	9,750	16,000
Madison	----	------	------	------	------	------
Mahaska	2	------	1,096,780	274,195	1,000	3,695
Marion	1	------	590,169	229,227	------	30,000
Marshall	4	1,776,843	2,128,361	655,807	16,591	93,836
Mills	----	------	------	------	------	------
Mitchell	9	1,190,188	4,609,846	1,298,013	86,430	30,223
Monona	1	------	236,724	86,520	203	209
Monroe	1	212,965	312,754	116,475	1,200	34,756
Montgomery	----	------	------	------	------	------
Muscatine	1	4,096,842	------	163,873	------	------
O'Brien	5	------	1,975,142	596,649	13,324	25,813
Osceola	3	------	1,026,882	291,954	2,993	2,551
Page	1	------	8,606,604	2,151,651	------	100,000
Palo Alto	14	17,558,028	2,736,041	1,703,153	169,927	70,752
Plymouth	5	55,492	2,360,465	844,402	20,811	43,519
Pocahontas	5	------	950,461	341,420	14,227	11,621
Polk	3	1,237,500	20,862,380	5,338,220	------	820,000
Pottawattamie	2	1,012,000	1,400,616	394,154	------	104,154
Poweshiek	6	12,396	2,721,920	734,036	4,503	17,236
Ringgold	----	------	------	------	------	------
Sac	8	44,019	2,039,041	688,576	19,914	7,830
Scott	2	35,630	1,299,327	415,569	354	205,561
Shelby	7	124,870	1,604,917	587,427	17,843	10,904
Sioux	6	94,242	4,679,494	1,603,086	22,758	28,736
Story	8	5,611,116	2,407,952	1,066,490	91,007	125,799
Tama	3	------	626,298	196,972	975	13,816
Taylor	2	------	4,184,744	1,046,186	11,000	21,050
Union	2	65,000	650,000	204,160	4,682	7,264
Van Buren	----	------	------	------	------	------
Wapello	2	648,341	2,420,078	624,285	2,680	------
Warren	----	------	------	------	------	------
Washington	1	------	851,300	234,360	------	------
Wayne	1	------	1,812,855	604,385	3,000	9,800
Webster	1	132,000	2,379,504	669,476	500	50,000
Winnebago	7	14,933,206	2,721,416	1,490,979	105,021	33,585
Winneshiek	11	------	8,960,784	2,361,041	13,457	71,392
Woodbury	2	300,000	18,100,757	6,584,823	8,000	717,300
Worth	9	2,684,132	3,277,515	1,061,432	64,890	9,937
Wright	5	------	3,890,339	978,306	31,222	35,774
Total	512	413,797,149	279,436,204	101,907,316	3,513,644	6,866,853

TABLE SHOWING NUMBER OF HAND SEPARATORS, NUMBER OF PATRONS NUMBER OF COWS.

Counties	No. of creamer's repor.ing hand separators	Receive cream by rail	Hand separator reported	No. of creamer's reporting patrons and cows	No. of Patrons reported	No. of cows reported
Adair	4	2	1,025	4	1,037	7,212
Adams	3	--------	405	3	417	3,395
Allamakee	8	--------	1,519	8	1,748	12,990
Appanoose	--------	--------	--------	--------	--------	--------
Audubon	9	--------	1,289	9	1,459	11,409
Benton	6	1	792	6	846	5,562
Black Hawk	11	2	742	15	1,708	15.368
Boone	4	2	368	4	454	2,622
Bremer	4	--------	153	25	1,917	18.533
Buchanan	7	--------	612	9	1,422	10,849
Buena Vista	6	1	1,009	6	1,017	7,268
Butler	14		712	16	1,759	13,622
Calhoun	5	3	2,680	5	3,000	21.427
Carroll	5	1	2,116	5	2,149	15.123
Cass	3	1	584	3	714	4.700
Cedar	3	--------	221	3	227	1,810
Cerro Gordo	6	3	1,780	6	1,898	12.012
Cherokee	3	2	625	3	694	4.700
Chickasaw	9	--------	942	13	2,017	16,966
Clarke	--------	--------	--------	--------	--------	--------
Clay	7	3	827	7	1,019	6,830
Clayton	12	3	1,857	13	2,459	17,241
Clinton	4	4	724	4	1,001	5,829
Crawford	1	1	1,972	1	1,972	13,400
Dallas	4	3	920	5	1,191	10,702
Davis	--------	--------	--------	--------	--------	--------
Decatur	1	1	--------	--------	--------	--------
Delaware	13	1	1,920	16	2,828	28,956
Des Moines	--------	--------	--------	--------	--------	--------
Dickinson	5	2	559	5	574	3,960
Dubuque	16	3	8,405	18	8,971	58,181
Emmet	--------	--------	--------	--------	--------	--------
Fayette	12	1	1,209	21	2,838	23,859
Floyd	7	--------	761	7	1,085	6,374
Franklin	6	3	1,316	6	1,460	10.730
Fremont	--------	--------	--------	--------	--------	--------
Greene	1	--------	174	1	196	1,272
Grundy	8	2	900	8	1,249	11,400
Guthrie	6	3	1,037	6	1,198	8,852
Hamilton	4	2	536	4	795	5,539
Hancock	7	2	917	7	929	7,428
Hardin	8	2	1,215	8	1,297	10,284
Harrison	--------	--------	--------	--------	--------	--------
Henry	--------	--------	--------	--------	--------	--------
Howard	6	--------	977	7	1,230	8,540
Humboldt	7	1	1,031	7	1,139	9,067
Ida	1	1	90	1	149	1,240
Iowa	7	--------	484	7	688	5,163
Jackson	11	3	1,092	12	2,369	16,935
Jasper	2	--------	157	2	238	1,614
Jefferson	2	2	278	3	312	1,840
Johnson	--------	--------	--------	--------	--------	--------
Jones	11	5	2,992	11	4,119	33,410
Keokuk	1	1	190	1	225	1,850
Kossuth	18	--------	1,308	18	1,580	13,150
Lee	1	1	1,200	1	1,600	12,800
Linn	11	3	2,255	11	2,848	22,722
Louisa	--------	--------	--------	--------	--------	--------
Lucas	--------	--------	--------	--------	--------	--------
Lyon	3	2	775	3	930	6,050
Madison	--------	--------	--------	--------	--------	--------
Mahaska	2	2	405	2	470	3,300
Marion	1	1	300	1	400	1,980
Marshall	3	1	630	4	815	5,178

TABLE SHOWING NUMBER OF HAND SEPARATORS, NUMBER OF PATRONS AND NUMBER OF COWS—CONTINUED.

Counties	No. of creamer's reporting hand separators	Receive cream by rail	Hand separators reported	No. of creamer's reporting patrons and cows	No. of Patrons reported	No. of Cows reported
Mills						
Mitchell	9		858	9	1,690	13,197
Monona	1	1	85	1	85	680
Monroe	1	1	195	1	195	1,025
Montgomery						
Muscatine				1	60	600
O'Brien	5	3	628	5	669	5,554
Osceola	3		268	3	343	2,602
Page	1	1	4,500	1	6,000	38,600
Palo Alto	14	1	813	14	1,342	10,838
Plymouth	5	2	841	5	869	6,945
Pocahontas	5	1	592	5	606	3,725
Polk	3	3	8,300	3	9,630	55,300
Pottawattamie	2	2	1,500	2	1,700	9,350
Poweshiek	6	2	939	6	1,036	7,105
Ringgold						
Sac	8	2	832	8	974	6,783
Scott	2	1	736	2	938	5,495
Shelby	7	2	987	7	1,019	6,269
Sioux	6	1	1,679	6	1,851	12,334
Story	8	2	842	8	1,083	7,345
Tama	3	2	327	3	348	2,432
Taylor	2	2	1,445	2	1,523	10,722
Union	2	1	380	1	400	2,000
Van Buren						
Wapello	2	1	882	2	976	5,950
Warren						
Washington	1	1	355	1	480	2,460
Wayne	1	1	1,700	1	1,700	8,950
Webster	1	1	1,050	1	1,225	7,350
Winnebago	7		775	7	1,293	11,220
Winneshiek	11		1,761	11	3,482	17,510
Woodbury	2	2	8,165	2	8,465	48,990
Worth	5	3	1,069	5	1,151	7,920
Wright						
Total	451	117	96,349	512	116,750	887,740
	9	1	858	9	960	7,254

TABLE SHOWING NET POUNDS OF BUTTER SHIPPED OUT OF THE STATE, AS REPORTED BY THE RAILROADS, FOR THE YEAR ENDING SEPTEMBER 30, 1909, COMPARED WITH SIMILAR STATEMENTS FOR THE YEAR ENDING SEPTEMBER, 1908.

Counties	1908	1909	Increase	Decrease
Adair	1,363,748	646,557		717.191
Adams	98,639	96,962		1,677
Allamakee	1,618,525	1,425,824		192,701
Appanoose	42,051	17,177		24,874
Audubon	1,475,384	890,933		584,451
Benton	458,297	403,079		55,218
Black Hawk	1,032,444	1,054,548	22,104	
Boone	201,647	123,353		78,294
Bremer	2,475,121	2,706,946	231,825	
Buchanan	1,980,218	1,157,376		822,842
Buena Vista	1,000,624	731,118		269,506
Butler	2,185,260	1,816,627		368,633
Calhoun	1,642,105	2,531,834	889,729	
Carroll	1,749,307	1,214,138		535,169
Cass	540,046	334,541		206,505
Cedar	733,708	468,330		265,378
Cerro Gordo	1,524,885	1,005,717		519,168
Cherokee	298,431	230,340		68,091
Chickasaw	2,105,415	1,873,147		232,268
Clarke	7,895	4,063		3,832
Clay	855,233	733,841		81,392
Clayton	3,078,268	2,550,446		527,872
Clinton	1,782,648	1,178,324		604,324
Crawford	1,195,398	1,092,077		103,321
Dallas	650,532	483,509		167,023
Davis	24,948	7,271		17,677
Decatur	528,566	451,992		56,574
Delaware	2,961,054	3,533,162	572,108	
Des Moines	115,920	116,954	1,034	
Dickinson	427,377	583,212	155,835	
Dubuque	2,329,629	3,502,953	1,173,324	
Emmet	570,585	428,389		142,196
Fayette	2,710,902	2,623,304		87,598
Floyd	619,237	549,885		69,352
Franklin	665,668	668,454	22,786	
Fremont	6,309	5,580		729
Greene	167,477	71,259		96,218
Grundy	816,346	818,025	1,179	
Guthrie	992,315	1,114,945	122,630	
Hamilton	1,244,965	848,754		396,211
Hancock	943,241	1,050,451	107,210	
Hardin	1,538,010	1,257,590		280,420
Harrison	38,910	49,642	10,732	
Henry	52,909	26,816		26,093
Howard	1,030,964	916,534		114,430
Humboldt	683,240	581,780		101,460
Ida	240,903	211,621		29,282
Iowa	536,510	566,505	29,995	
Jackson	2,112,726	2,068,985		43,741
Jasper	118,722	130,839	12,117	
Jefferson	146,646	122,134		24,512
Johnson	24,612	2,112		22,500
Jones	5,812,705	4,637,289		1,175,416
Keokuk	93,563	277,554	183,991	
Kossuth	1,654,957	1,685,984	31,027	
Lee	2,105,978	2,724,932	618,954	
Linn	1,719,490	1,654,605		64,885
Louisa	4,161	14,002	9,841	
Lucas	20,353	5,226		15,127
Lyon	596,610	565,264		31,346
Madison	3,822	3,094		728
Mahaska	286,981	155,833		131,148
Marion	213,589	153,967		59,622
Marshall	463,286	353,582		109,704
Mills	4,082	3,983		99
Mitchell	1,477,609	1,195,317		282,292
Monona	200,908	215,895	14,987	
Monroe	55,860	5,927		49,933

TABLE SHOWING NET POUNDS OF BUTTER SHIPPED OUT OF THE STATE, AS REPORTED BY THE RAILROADS, FOR THE YEAR ENDING SEPTEMBER 30, 1900, COMPARED WITH SIMILIAR STATEMENTS FOR THE YEAR ENDING SEPTEMBER 1908—CONTINUED.

Counties	1908	1909	Increase	Decrease
Montgomery	7,274	2,940	------------	4,334
Muscatine	37,632	25,834	------------	11,798
O'Brien	631,038	325,156	------------	305,882
Osceola	493,699	289,187	------------	104,512
Page	743,820	637,569	------------	106,251
Palo Alto	1,390,973	1,274,842	------------	116,131
Plymouth	886,340	547,724	------------	338,616
Pocahontas	638,897	349,646	------------	289,251
Polk	4,122,972	4,183,870	60,898	------------
Pottawattamie	949,045	57,442	------------	891,603
Poweshiek	450,283	422,721	------------	27,562
Ringgold	63	------------	------------	63
Sac	704,713	545,456	------------	159,257
Scott	1,604,414	1,849,266	244,852	------------
Shelby	604,018	341,612	------------	262,406
Sioux	1,807,686	1,581,346	------------	226,340
Story	1,232,203	887,668	------------	344,535
Tama	211,248	221,064	9,816	------------
Taylor	1,554,537	449,598	------------	1,104,939
Union	1,311,806	862,050	------------	449,756
Van Buren	16,574	3,213	------------	13,361
Wapello	711,499	619,926	------------	91,573
Warren	987	693	------------	294
Washington	139,360	104,253	------------	35,107
Wayne	732,725	732,227	------------	498
Webster	393,566	617,175	223,609	------------
Winnebago	1,435,261	1,196,381	------------	238,880
Winneshiek	1,651,093	1,631,337	------------	19,756
Woodbury	6,061,460	5,771,198	------------	285,262
Worth	966,578	777,428	------------	189,150
Wright	1,150,752	679,153	------------	471,599
Total	98,970,991	87,773,835	4,750,583	15,947,739

PART X.

PAPERS ON LIVE STOCK, AGRICULTURAL AND MISCELLANEOUS TOPICS

FROM

BULLETINS, AGRICULTURAL PRESS

AND

Papers Read Before County Farmers Institutes

THE IOWA SILO, AMES, IOWA

INTRODUCTION.

For several years the staff of the Agricultural Engineering Section of the Iowa Experiment Station has been making careful investigations concerning modern silo construction and the success and merits of each type now in use. The results of these investigations were first published in Bulletin 100, which was distributed in July, 1908. The demand for this bulletin was so large, not only from Iowa, but from other states, that a second edition was published in July, 1909. This bulletin treated of all the types of silo construction then in common use.

Bulletin 100, in addition to the data concerning the common types of silos, presented a design of a new silo, the walls of which were constructed of hollow clay building blocks. Because of being presented by the Iowa Experiment Station, it was called the Iowa Silo. Although a silo of this design was under construction at the time of the publication of the bulletin, it was not possible to report in regard to its success in actual service.

At the time of the second edition, the experimental Iowa silo had been in actual service for one year and several other silos had been located with walls constructed of material much similar to that originally proposed for the Iowa silo. During 1909, several silos were built in different parts of the state. The uniform success of these silos, a detailed report of which will be given later, and the continued unshaken faith in the design, material and construction of the Iowa type of silo, lead to the publication of a bulletin treating of the merits and construction of this one particular type. Since the publication of the two editions of Bulletin 100, there has been a large demand for information concerning the construction of the Iowa silo. It is the purpose of Bulletin 117 to furnish this in a detailed and illustrated manner which will enable any one desiring an Iowa silo either to construct it or to enter into a satisfactory contract with a mason or contractor for its construction.

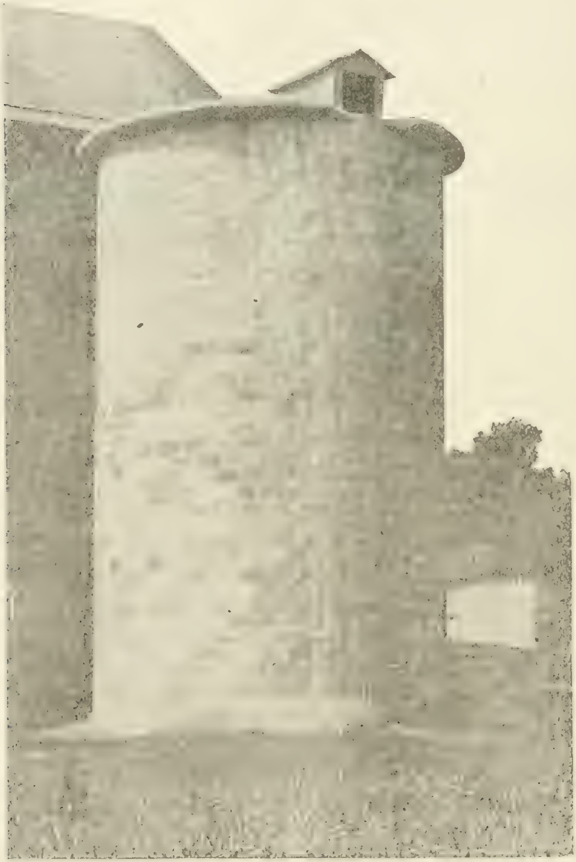


Fig 1. Iowa Silo No. 1, Ames, Iowa.

In presening this bulletin to the public, it is the wish of the authors that it be clearly understood that as members of the Agricultural Engineering Staff of the Iowa Agricultural Experiment Station, they do not favor or recommend any one type of silos above all others. Different types of silos have different characteristics or merits and upon individual circumstances and conditions will depend the type of silo which should be constructed. The selection of a silo consists in choosing the type whose characteristics are adapted to the conditions to be met.

It is the duty of the Agricultural Engineering Staff to furnish definite information in regard to the success, durability and cost of all types of silos as far as possible, and their relation to the various conditions as they may exist.

Furthermore, it is the purpose of the authors to suggest improvements, and to design and develop new types of construction where direct benefit will come therefrom. In presenting in a detailed manner the Iowa silo, it is not intended that it should be recommended above all others. As reliable information as is possible to secure is furnished concerning its merits and faults and, no doubt, many desiring a silo will find the Iowa silo well adapted to their needs.*

The use of the hollow clay building blocks properly reinforced for silo construction was an idea which came to the junior author during the investigations of silo construction which were carried on previous to the publication of Bulletin 100. Since announcing the design, it has been learned that building blocks in more or less similar form, had previously been used in the construction of silos and the authors have not hesitated in any way to utilize the benefit to be derived from the experiences of others along this line. It is also desired to acknowledge the many valuable suggestions received from masons who have become interested in this type of construction, block manufacturers, members of the faculty of the Engineering Division of Iowa State College and others. Any suggestion whereby the present design may be improved will be gratefully received.

LIST OF IOWA SILOS.

Th following is a list of Iowa silos which have been built during the past two years. With the exception of the first, the experimental silo at Ames, all of these silos were constructed during the summer of 1909. Silos No. 11, 12, and 13, were constructed without the direct co-operation of the Agricultural Engineering Section. Views of several of these silos, numbered as in the following list, are to be found in this bulletin.

Number.	Location.	Diameter	Height.
1	Ames, Iowa	16 ft.	30 ft.
2	Linn Grove, Iowa	16 ft.	35 ft.
3	Rock Valley, Iowa	16 ft.	35 ft.
4	Rock Valley, Iowa	16 ft.	37 ft.
5	Pocahontas, Iowa	18 ft.	36 ft.
6	Laurens, Iowa	18 ft.	36 ft.
7	Laurens, Iowa	16 ft.	30 ft.
8	Rockford, Iowa	18 ft.	35 ft.
9 and 10	Ottumwa, Iowa	18 ft.	35 ft.
11	Woodward, Iowa	16 ft.	32 ft.
12	Clarion, Iowa	16 ft.	36 ft.
13	Hawkeye, Iowa	12 ft.	36 ft.

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*For general information concerning silo construction, the reader is referred to Bulletin 100, of this Station, "Modern Silo Construction." Information concerning concrete silo construction may be obtained from cement manufacturers or their associations. The construction of a stave silo is described in Circular 136, "How to Build a Stave Silo," Bureau of Animal Industry, U. S. Dept. of Agriculture. Silo manufacturers will be glad to furnish information concerning patented silos.

ESSENTIALS OF A GOOD SILO.

An attempt is here made to outline the essentials or points of merit to be found in the ideal silo. This is done in order that a direct comparison may be made between this ideal silo and the Iowa silo.

IMPERVIOUSNESS OF THE WALLS.

The fundamental principle involved in preservation of silage is the retention of moisture within the silage and the exclusion of air. For this reason, the silo wall must be non-porous. Moisture must be prevented from passing out and air from passing in.

RIGIDITY, STRENGTH AND SMOOTHNESS OF WALLS.

An ideal silo must have rigid walls. It must be strong enough to resist the bursting pressure of the silage. This acts outward in all directions as the silage settles. The friction of the silage against the wall, and the weight of the wall produce a crushing action which is great near the bottom of the silo. A silo when empty should be heavy enough to stand against heavy winds. The inside of a silo wall should be reasonably smooth to permit the silage to settle freely. If the wall is not smooth or if there are shoulders or offsets on the inside surface air pockets will be formed and a considerable loss of silage will result.

DURABILITY.

After due consideration to all other points of merit to be found in silos, the most desirable silo is the one that is the most durable and will give the longest term of service. The durability of a silo depends first upon its strength, and second, the durability of the material used in its construction.

To be durable, any material must resist the action of the weather, the constant wetting and drying, freezing and thawing in the winter season, and any disintegrating action which may be due to the silage itself. Some material will disintegrate with age, and other materials suffer from rapid decay when subject to the warm, moist conditions which exist in the silo.

CARE AND REPAIR.

It is desirable that a silo require the minimum expenditure in the way of labor and material for its up-keep. A silo which must be adjusted for shrinkage and expansion is of less value than one which does not need such attention. Often this work is neglected, and loss results.

Some silos must be frequently repainted in order to present a pleasing appearance. This means added expense. All parts should be equally durable and lasting. The replacement of parts which are short-lived, the substitution of new pieces for those which have become decayed or faulty for any other reason, adds materially in many cases to the cost of maintaining the silo.

FROST RESISTANCE.

In Iowa the winters are so severe that it is difficult to construct a frost-proof silo. The silo wall which will prevent freezing to the greatest extent is the most desirable.

CONVENIENCE.

A silo should be convenient for filling and so arranged that the silage may be easily removed from day to day during the feeding season. The doors should be so constructed that they can be put in place and removed with the least effort. They should permit easy access to the silo and allow the removal of the silage with the least possible amount of labor.

PORTABILITY.

There are instances where tenants and others desire a silo which may be used in one place for a time and then moved to a new location. Under such circumstances, this feature should be given due consideration.

FIRE PROOF CONSTRUCTION.

It adds materially to the value of any building to be made of fire proof material. The importance of this feature is realized when the large annual loss from fire is taken into consideration.

APPEARANCE.

All farm buildings should be of good appearance. This feature adds both to the attractiveness and the value of the farm. A permanent silo of neat appearance is the most desirable silo to construct, other things being equal.

SIMPLICITY OF CONSTRUCTION.

It is an advantage to select a silo which can either be constructed without special skilled labor, forms or tools, or can be purchased ready for erection without the aid of skilled labor.

COST.

One of the most important features to be considered in the selection of a silo is its first cost. The silo which will furnish storage for silage at the least cost per ton is the silo to build, other points being equal.

THE IOWA SILO.

A discussion of the Iowa silo under each of the points of merit which have been mentioned follows:

IMPERVIOUSNESS OF THE WALLS.

Hard burned hollow clay building blocks will not absorb a large amount of water. Moisture is not readily transferred through a wall of such material. We recommend that only blocks which have a low absorption be used for silo construction. Blocks of this kind are more durable, and a silo built of them will preserve silage better.

The mortar used in laying the blocks should be a rich, water-tight mixture. This will resist the passage of moisture or air through the joints. To secure a more perfect wall, it is recommended that the inside be washed with cement. This will seal any minute openings or imperfections.

A careful personal inspection has been made of the silage in the thirteen Iowa silos which have been built up to the time of writing and, with one unimportant exception, the silage was found in first-class condition throughout the entire feeding season. There is no reason why the walls of the Iowa silo should not be entirely satisfactory for the preservation of silage. That they are satisfactory has been demonstrated by actual test.

RIGIDITY, STRENGTH AND SMOOTHNESS OF WALLS.

The outward or bursting pressure of silage has been found by previous experiment to amount to about 11 pounds per cubic foot. To be well designed, any silo must be constructed of material of sufficient strength to resist this pressure. Square silos are not well adapted to resist this bursting pressure on account of their flat sides. They are almost sure to bulge. For this reason the round silo is the most desirable form.

The silo, owing to its diameter and height, offers a rather large amount of surface upon which the force of the wind may act. For this reason the silo walls should be of rigid construction and not readily distorted or damaged by high winds. Furthermore, it is best that the structure should be heavy enough when empty to resist being moved readily from its foundation by strong winds. Some types are so light that they must be thoroughly tied to adjacent buildings and held to place by guy wires. The importance of this feature is emphasized through the fact that certain insurance companies do not care to insure such types of silos and either will not insure at all or only when extra charge is made for exposure. The Iowa silo is rigid enough and heavy enough so that it is not affected by wind.

Enough steel reinforcement is laid in the mortar joints of the Iowa silo to carry the entire bursting pressure of the silage with a reasonable factor of safety. Originally, the safe working load of the steel was taken at 20,000 pounds per square inch, which gives a factor of safety of three for steel rolled in relatively large bars. As it has been found that steel wire is the most desirable reinforcement, the safe working strength has been raised to 30,000 pounds per square inch. The drawing process through which wire must pass in its manufacturing increases its tensile strength and this change on the part of the designers is entirely justified as there is no reduction in the strength of the reinforcement. As originally dsigned, practically as much steel was included in the walls of the Iowa silo as was to be found in the hoops of the average stave silo which not only must resist the bursting pressure of the silage, but the swelling action of the staves. The form of reinforcement which has been found the most convenient for the Iowa silo is hard black, No. 3 steel wire which is laid in the mortar joints as described later.

Some silo walls have ben known to crumple at the bottom, due to the weight of the walls themselves and to the friction of the silage. The 4-inch block wall of a 16-foot Iowa silo, 35 feet high, will carry not only its own weight at the bottom, but that of all the silage which could be placed in the silo several times over.

When constructed of curved blocks, the Iowa silo has been made reasonably smooth on the inside, there has been no loss of silage from the roughness of the wall. Silo No. 1, which was constructed of 16-inch blocks with little curvature, permitted a few air pockets to form, resulting in a small amount of spoiled silage after being stored in the silo for two years.

DURABILITY.

The walls of the Iowa silo are constructed of hollow, vitrified clay building blocks which, as far as weather resistance is concerned, are as durable as any building material which can be obtained. Their durability corresponds with the durability of brick which is to be found in all parts of the state. This does not mean that all hollow building blocks are durable, for there are good and bad blocks on the market. Good blocks are so plentiful that no one need make the mistake of selecting blocks of questionable merit. A discussion of the quality of blocks is given later.

The roof of the Iowa silo, like the walls, is made of durable material. A cheaper roof may be used if desired, but it is strongly advised that the concrete roof be used where possible.

One common mistake met with in silo construction is that the door frame is made of material which will soon decay or rust and have to be replaced. The door frame of the Iowa silo is made of reinforced concrete which, when properly constructed, should be as durable as the walls themselves.

The materials used in the Iowa silo will resist decay, disintegration, the action of frost, and any implied or real action of the acidity of the silage. Even the steel which is placed in the mortar joints and concrete door frame as reinforcement, is thoroughly protected from rust. So carefully has the matter of durability been considered in the design of the Iowa silo that it would be difficult to estimate its life. When carefully built it ought to last for several generations.

The doors of the Iowa silo are designed to be made of wood. They will decay and must be replaced after several years. The convenience and low cost of the wooden doors, which may be easily replaced, justifies their use.

CARE AND REPAIR.

The Iowa silo when properly constructed is practically free from any expense for repair and maintenance. The only possible expense may be the occasional washing of the inside of the walls at intervals of not less than five years, with a cement wash and the replacement of the doors after they have become rotten from use.

FROST RESISTANCE.

Owing to the fact that all Iowa silos do not now have roofs and that no two men use the same methods in feeding silage, it has been difficult for the authors to compare the frost resistance of different types of silos. It is, however, a very conservative statement to say that the average amount of frozen silage found in Iowa silos during personal inspection trips did not exceed the amount found in wooden silos in the same neighborhood and under the same conditions of exposure.

The hollow wall of the Iowa silo in which the circulation of air is quite thoroughly restricted, tends to make it frost resistant. Dry fir lumber is about six times as efficient a non-conductor of heat as vitrified clay. Since the Iowa silo wall is twice as thick as the average silo stave, and because it is only about one-fourth solid, it should be at least equally as efficient as a two-inch wooden wall which is always moist, a condition which lowers the efficiency of wood as a non-conductor. The Iowa silo wall, however, is not nearly as frost proof as a double wall concrete silo or a cement block silo with less material joining the two walls and with restricted air circulation.

CONVENIENCE.

The Iowa silo has been designed and constructed with either individual or continuous doors. The continuous doorway has crossties 42 inches apart which is an important advantage over the usual construction which in some instances has hoops or ties as close as 26 inches. When crossties are close, the continuous door offers but little advantage if any over the individual door. With these improved doors, the Iowa silo offers as many advantages for convenience in removing silage as any construction now known. Fig. 5 is a view of the continuous doorway of the Iowa silo, looking toward the roof, showing the large openings between the crossties.

The concrete roof of the Iowa silo has a wide, flat gutter in which it is possible to stand while adjusting the blower pipe of an ensilage cutter to the silo for filling. This is a valuable convenience compared with the usual steep roof upon which it is impossible to stand, requiring that the work of adjusting the blower pipe be done from the window or a ladder.

PORTABILITY.

In no sense can the Iowa silo be considered portable. If a silo is desired which must be moved to a new location after a few years, it is doubtful if the Iowa silo would fill the requirements. The roof and door frame would be entirely destroyed in moving and it would be worth nearly as much as the value of the blocks to clean them for use the second time.

FIRE PROOF QUALITIES.

The Iowa silo is perfectly fire-proof. It is hard to see how it could be even slightly damaged by a fire. In general, fire-proof construction is given too little attention. One of the authors of this bulletin visited a masonry silo from which silage was fed within twenty-four hours after all the adjoining buildings had been burned from around it, leaving it unharmed and containing the only feed stuff saved from the fire. Hollow, vitrified clay building blocks are widely used for fireproofing purposes.

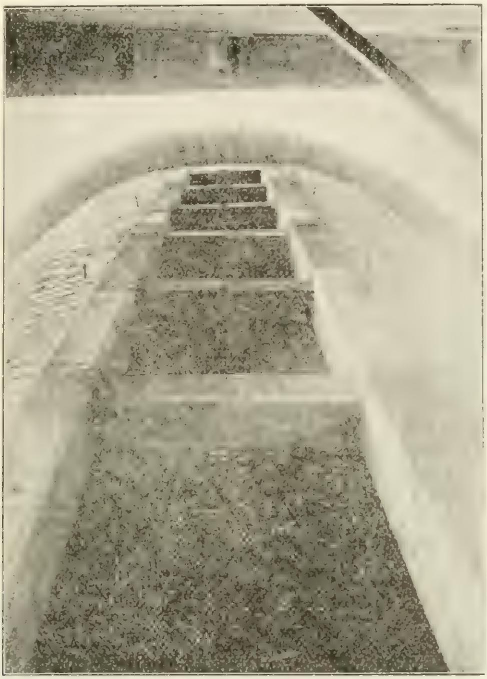


Fig. No. 5. View of Doorway, looking toward the roof. Notice the size of Openings.

APPEARANCE.

The Iowa silo presents a pleasing appearance of solidity, durability and permanency.

SIMPLICITY OF CONSTRUCTION.

The concrete silo upon investigation has been found to be a satisfactory silo when carefully built. Its construction, however, is so difficult that very few really good silos have been found which have not been constructed by the professional silo builder. The manipulation and construction of the forms for building a concrete silo are so difficult that although a silo may be satisfactory as far as strength and keeping qualities are concerned, the walls are often rough, distorted and not of good appearance. Good forms for the concrete wall are expensive and considerable equipment is necessary to handle the concrete.

The walls of the Iowa silo are of a construction familiar to all masons and for this reason a satisfactory job is practically assured. The reinforcement of the walls with the steel laid in the mortar joints is a very simple matter.

The forms for making the reinforced concrete doorways, although of much the same character as those required for making a concrete silo wall, are much more easily handled and are quite simple. The scaffold for building the silo has been carefully worked out. The roof construction is simple and should not give anyone trouble who is familiar with concrete work in any form. The simplicity of the construction of the Iowa silo is indicated in Fig. 6, which shows a wagon loaded with all of the scaffold, derrick, guide, mortar box, and tools used in construction of the 16x35 foot silo and roof shown at the left. A further idea of the simplicity and rapidity with which the Iowa silo can be constructed can be formed from Figs. 7, 8, 9 and 10, which show the daily progress of constructing a silo 18 feet in diameter with two masons and helpers at work.

COST.

An attempt has been made to determine accurately the cost of the original thirteen Iowa silos. A definite statement is hard to get, since in almost every instance the farm force assisted to a more or less extent, introducing items of labor, haulage, etc, difficult to estimate. The owners in most instances prefer not to take these items into account, yet in making a complete statement, they must be included.

Silo No. 1, owing to the fact that it was an experimental silo and that some of the material was secured at a cost below normal, is not listed here.

Silo No. 2 was built under normal conditions but certain experiments increased its cost to some extent over the next silo which was built. The development of certain features of construction, especially the scaffold, was a large factor in reducing the cost of those constructed later.

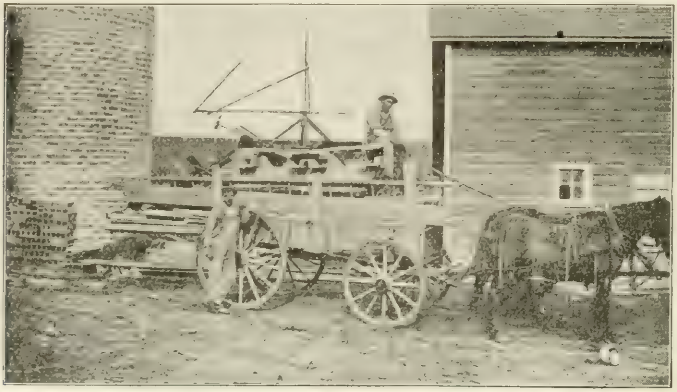


Fig. 6. Total equipment including Derrick, Scaffold, Guide, Mortar Box and all tools required to build the Iowa Silo.

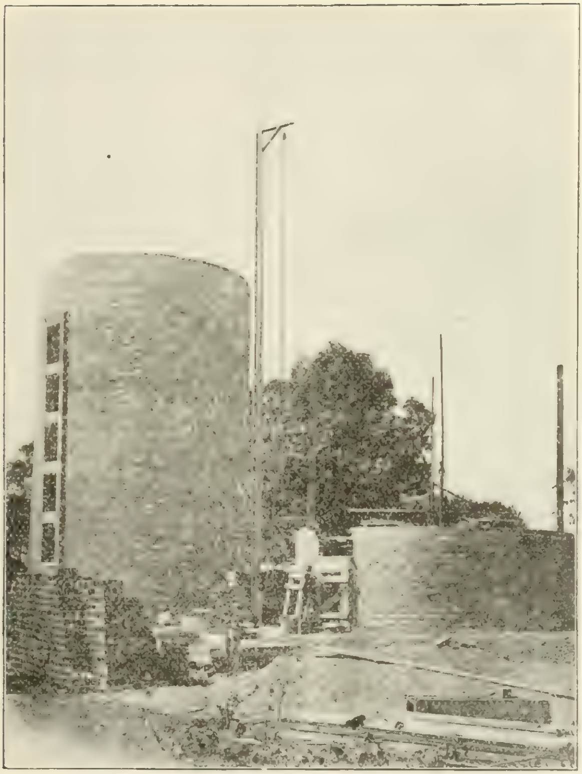


Fig. No. 7. Progress of Construction. End of First Day.

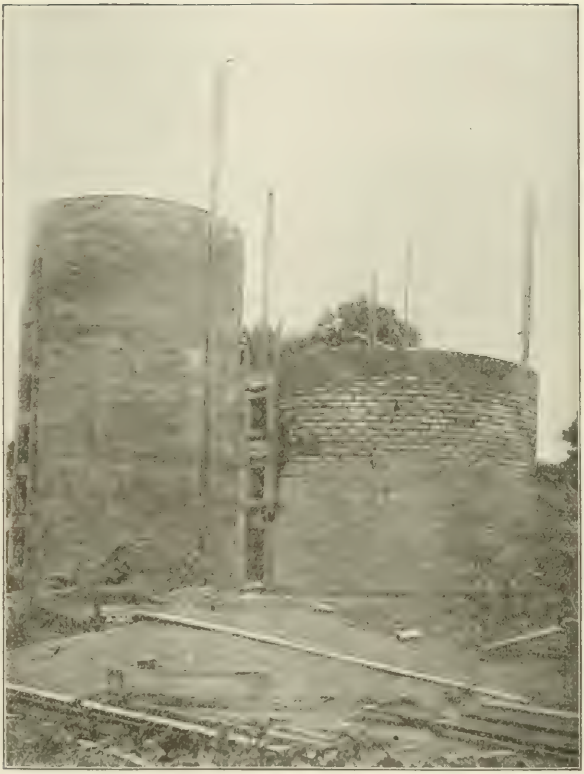


Fig. 8. Progress of Construction. End of Second Day.

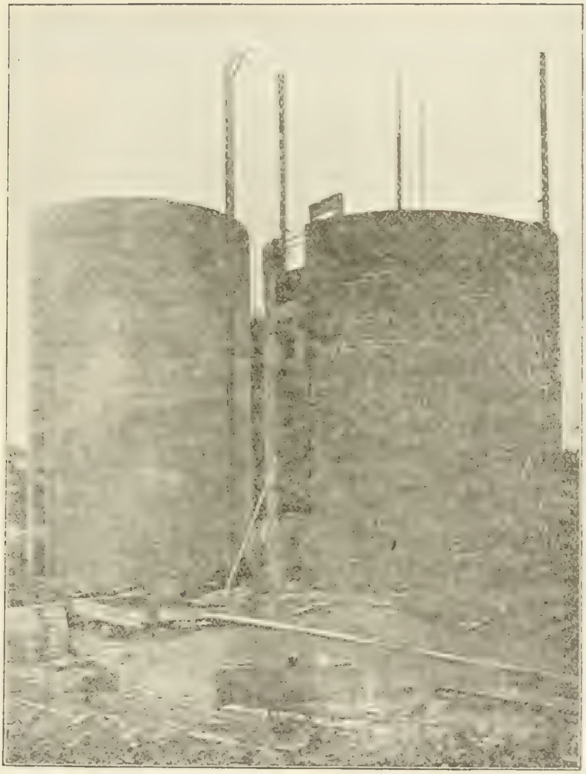


Fig. No. 9. Progress of Construction. End of Third Day.

Following is a statement of the cost of Silo No. 2, which is located at Linn Grove, Iowa.

REPORT OF THE COST OF IOWA SILO NO. 2, LINN GROVE, IOWA.

Size, 16 feet in diameter by 35 feet high.

Excavation, 3½ feet deep—		
Labor of superintendent, 15 hrs. @ 50c	$ 7.50	
		$ 7.50
Footing and Floor—		
Labor of superintendent, 9 hrs. @ 50c	$ 4.50	
Labor of mason, 9½ hrs. @ 40c	3.80	
Labor of mason's helper, 9½ hrs. @ 30c	2.85	
56 ft. of discarded 36-inch woven wire fence	....	
52 ft. 4-inch drain tile	1.68	
14 sacks cement @ 45c	6.30	
4 yds. of gravel @ 25c	1.00	
		20.13
Wall and Door Frame—		
Labor of superintendent, 65 1-3 hrs. @ 50c	$ 32.67	
Mason, 66¼ hrs. @ 40c	26.50	
Helper, 66 hrs. 30c	19.80	
Unskilled labor, 173 hrs. @ 15c	25.95	
Blocks, 4,000 4x5x12½ @ $17.50 per M	70.00	
Freight	19.42	
Cement, 38 sacks @ 45c	17.10	
Lime, 18 sacks @ 30c	5.40	
400 lbs. No. 3 wire @ 3c	12.00	
75 lbs. ⅜ steel, $1.31, cartage and freight 60c	1.91	
Sand, 4 yds. @ 50c	2.00	
Additional wire	3.87	
		236.62
Moving Scaffold (old material used)—		
Labor of superintendent, 19 hrs. @ 50c	$ 9.50	
Labor of mason, 16 hrs. @ 40c	6.40	
Labor of helper, 14 hrs. @ 30c	4.20	
Labor of unskilled, 9 hrs. @ 15c	1.35	
Stirrups	7.50	
		28.95
Roof—		
Making cornice blocks—		
Labor of superintendent, 19 hrs. @ 50c	$ 9.50	
Cement, 6 sacks @ 45c	2.70	
Sand, 2-3 yds. @ 50c	.33	
10 lbs. No. 9 wire @ 3c	.30	

Setting cornice blocks—		
Labor of superintendent, 13 hrs. @ 50c	6.50	
Labor of mason, 13 hrs. @ 40c	5.20	
Labor of unskilled, 17 hrs. @ 15c	2.55	
1 sack of cement @ 45c	.45	
Wire for tying down	.20	
Framing false work—		
Carpenter, 5 hrs. @ 30c	1.50	
Setting false work—		
Superintendent, 4 hrs. @ 50c	2.00	
Mason, 4 hrs. @ 40c	1.60	
Helper, 4 hrs. @ 30c	1.20	
Concrete—		
Cement, 18 sacks @ 45c	8.10	
Gravel, 3 cu. yds. @ 25c	.75	
Placing expanded metal—		
Mason's helper, 13 hrs. @ 30c	3.90	
Expanded metal	15.80	
Freight	2.32	
Lumber of roof falsework, 124 ft. lumber @ $30 per M	3.72	
Labor of putting on concrete—		
Superintendent, 7 hrs. @ 50c	3.50	
Mason, 7 hrs. @ 40c	2.80	
Helper, 7 hrs. @ 30c	2.10	
Unskilled labor, 10 2-3 hrs. @ 15c	1.60	
Plastering roof and removing falsework—		
1-3 yd. sand @ 50c	.17	
3 sacks of cement @ 45c	1.35	
1½ sack lime @ 30c	.45	
Labor, mason, 10 hrs. @ 40c	4.00	
Labor, helper, 10 hrs. @ 30c	3.00	
		87.59
Lumber for door forms, 110 ft. @ $30 per M	$ 3.30	
Labor of making, superintendent, 15 hrs. @ 50c	7.50	
		10.80
Lumber for doors, 150 ft. @ $35 per M	$ 5.25	
Labor of making, carpenter, 3 hrs. @ 30c	.90	
		6.15
		$390.99

This statement is much larger than that furnished by the owner, which is as follows:

Steel	$ 1.56
Freight	.35
Wire for eaves	.50
Molding	.15

Bolts	.40
Black wire	.50
Pipe	.15
No. 3 wire	12.00
Blacksmith	7.75
Common tile	1.68
Vitrified blocks and freight	89.42
Steel for roof	15.80
Freight for same	2.32
Telephone wire	3.87
80 sacks cement @ 45c per sack	36.00
6 loads of sand	1.50
5 loads of gravel	1.25
2 2-3 bbls. lime	3.90
Labor	30.00
Mason work	92.00
Carpenter work	4.50
Boy labor	2.50
Total	$308.10

The latter statement represents accurately the actual cash outlay of the owner for the silo.

COST OF IOWA SILO NO. 3, AT ROCK VALLEY, IOWA.

Size, 16x35 feet, inside.

Excavation, 3½ ft. deep—		
Labor of excavating and placing footing by contract	$ 10.00	
Cement, 2½ bbls. @ $1.60	4.00	
Gravel, 2 cu. yds. @ $2.00 delivered	4.00	
		$ 18.00
Wall and Door Frame—		
Labor of superintendent, 84 hrs. @ 50c	$ 42.00	
Mason, 71 hrs. @ 40c	28.40	
Labor, 179 hrs. @ 20c	35.80	
Blocks, 4x5x12, 4,000 @ $17.50 per M	70.00	
Freight	20.88	
Hauling blocks	9.60	
Cement, 7 bbls. @ $1.60	11.20	
Lime, 3 bbls. @ $1.50	4.50	
Steel wire, 450 lbs. @ $2.37½	10.69	
Steel, ⅜-inch, 75 lbs., $1.31, cartage and freight 60c.	1.91	
Sand, 4 yds. @ $2.25	9.00	
		243.98
Scaffold—		
Labor, superintendent, 19 hrs. @ 50c	$ 9.50	
Labor, unskilled, 20 hrs. @ 20c	4.00	
		13.50

Material—		
5 pcs. 2x8x12.		
2 pcs. 2x10x16.		
4 pcs. 2x4x6.		
6 pcs. 2x12x14.		
8 pcs. 2x6x16.		
20 pcs. 1x6x16—605 ft. @ 30c	$ 18.15	
8 pins ¾x16 in.	.50	
4 wire stretchers @ 75c	3.00	
3 lbs. spikes, 16d	.10	
		35.25
Roof—		
Making cornice blocks—		
Labor of superintendent, 10 hrs. @ 50c	$ 5.00	
Unskilled labor, 15 hrs. @ 25c	3.75	
Cement, 5½ sacks @ 45c	2.48	
Sand, 2-3 yds. @ $2.25	1.50	
Steel reinforcement, 6 lbs. @ 3c	.18	
Setting blocks—		
Labor superintendent, 4 hrs. @ 50c	2.00	
Labor, mason, 4 hrs. @ 40c	1.60	
Unskilled labor, 12 hrs. @ 25c	3.00	
1 sack cement	.45	
Wire for tying down	.30	
Framing false work—		
Carpenter, 4 hrs. @ 30c	1.20	
Setting—		
Superintendent, 2½ hrs. @ 50c	1.25	
Mason, 2½ hrs. @ 40c	1.00	
Carpenter, 2 hrs. @ 30c	.60	
Expanded metal, $16.00 and $4.86	20.86	
Placing expanded metal—		
Superintendent, 4 hrs. @ 50c	2.00	
Mason, 4 hrs. @ 40c	1.60	
Unskilled labor, 4 hrs. @ 25c	1.00	
Lumber for false work, 124 ft. lumber @ $30 per M	3.72	
Cement, 20 sacks @ 45c	9.00	
Gravel, 2 yds. @ $2.25	4.50	
Labor of putting on concrete—		
Superintendent, 8 hrs. @ 50c	4.00	
Mason, 8 hrs. @ 40c	3.20	
Unskilled labor, 21 hrs. @ 25c	5.25	
Removing falsework and scaffold—		
Mason, 4 hrs. @ 40c	1.60	
Helper, 4 hrs. @ 30c	1.20	

Plastering—		
Mason, 5 hrs. @ 40c	2.00	
Helper, 5 hrs. @ 30c	1.50	
Cement, 3 sacks @ 45c	1.35	
Lime, 1½ sacks @ 30c	.45	
		87.54
Lumber and Bolts for Door Forms—		
Material—		
110 ft. @ $30.00	$ 3.30	
12 bolts	1.00	
2 lbs. nails, 7d	.06	
		4.36
Derrick—		
1 pc. 2x10x18,		
1 pc. 2x6x16,		
1 pc. 2x4x10,		
2 pcs. 1x6x16—63 ft. @ 30c	$ 1.80	
		1.80
Doors—		
Lumber, 272 ft. @ 35c	$ 9.52	
Labor, 10 hrs. @ 30c	3.00	
		12.52
		$403.45

The owner of this silo states that, according to his accounts, this silo cost, without the chute, about $325 to $350.

REPORT OF THE COST OF OTHER IOWA SILOS.

The owner of Iowa silo No. 4 writes as follows:

"I hereby send you the figures for the cost of my Iowa silo":

Steel	$ 28.00
Brick	88.00
Cement	48.50
Lime	10.00
Labor, masons	62.50
Sand	10.00
My own labor	35.00
	$282.00

In regard to Iowa silo No. 6, the following statement was received: "Your letter of the 19th at hand, and with pleasure will give an itemized statement, not including your labor nor my own."

98 sacks of cement	$ 44.10
25 sacks of lime	6.25
7 yds. of sand	1.75
900 lbs. wire	27.00
2,640 5x8x12 blocks	93.68
100 5x8x6 blocks	3.70

144 feet of ⅜-inch rods	3.00
5 doors	9.20
Mason work	96.00
Bolts for chute	.60
	$285.28

The cost of Iowa silo No. 7 was furnished by its owner in the following statement:

Labor	$ 65.00
Brick	74.00
Wire	18.00
Cement	30.00
Lime	5.00
Lumber	5.00
Steel rods and bolts	10.00
Four doors	8.00
	$215.00

The following is the cost of two Iowa silos, Nos. 9 and 10, each 18x36 feet, 30 feet above ground, 6 feet below, from the statement of the owner, which does not include price of roof:

Tile, 4x5x12, at $18.22 per M.	$174.25
Wire for reinforcing	63.00
60 bbls. of cement @ $1.35	81.00
Brick masons @ 62½c per hour	124.23
Tenders at 35c per hour	60.35
Other help	31.10
Excavating	23.60
Lumber for forms and doors	23.75
Sand	45.00
Hauling tile	27.50
Six bbls. lime	6.60
Work on foundation	23.24
Boarding of hands	33.60
Incidentals, including hardware, horse feed, railroad fare, etc.	32.85
	$750.37

Silo No. 13 was built by contract for $381.60, complete with roof.

Attention is called to the fact that where experimental silos were constructed in co-operation with the Agricultural Engineering Section no charge was made for superintendent of construction other than expenses, but his time has been included in the Section's estimate at 50 cents per hour.

The time of the superintendent devoted to each silo was as follows:

No. 2. Fifteen days.
No. 3. Fifteen days.
No. 4. Three days.
No. 5. Four days.
No. 6. Three days.
No. 7. One-fourth day.
No. 8. Seven days.
Nos. 9 and 10. Six days.

CONSTRUCTION OF THE IOWA SILO.

THE LOCATION OF THE SILO.

A very large percentage of the silos used in Iowa are located outside of the barn. There are good reasons for this. First, the Iowa silo is of such a construction that it does not need the protection of a building. Second, it is not economical to place a silo in a building where it will occupy space which may be put to other use. Third, a silo located inside of a building is often unhandy to fill. The forage cannot be delivered to the cutter conveniently. Fourth, by locating a silo outside of the building and only connecting it thereto with a passage provided with doors, the objectionable odor of the silage may be kept out of the building. By arranging the silo so as to be connected to the feeding room with a feedway, it is as convenient for feeding as when located in the building itself. A very common arrangement is to so locate the silo that the passageway from silo to barn is a continuation of the feedway in the barn. In general, it seems that there are few advantages in building a silo inside of a building and many in building it outside. There are types of barns, the large round barn for instance, which are of a form making it possible for a silo to be conveniently located at the center.

FOUNDATION.

Any building should rest upon a foundation sufficiently broad to prevent appreciable settling, and deep enough to rest upon soil which is never disturbed by frost. In the case of a masonry silo, the foundation may be advantageously a continuation of the wall. If the space enclosed within the foundation be excavated, it becomes available for the storage of silage. This space, however, costs a little more than the space in other parts of the silo on account of the additional labor of excavation. Thus, it will be seen that it is not economical to extend the foundation deeper than necessary to get below frost. For the Iowa, a good depth of pit is three and one-half feet.

EXCAVATION.

After locating the center of the silo, the circle for the excavation may be laid out to good advantage by the device shown in Fig. 12. By using a carpenter's level on the sweep and a sliding block for making the circle on the surface, the difficulties encountered on sloping ground may be overcome. Some of the preliminary excavation may be accomplished by team and scraper.

DRAINAGE OF FOUNDATION.

In case there is a probability of ground water standing about the foundation, there should be a tile drain placed as shown in Fig. 13 and Plates I and V. Porous back filling placed outside the foundation insures that any surface or ground water will sink to the drain rather than fill the blocks of the wall through any crevice which may exist.

TYPES OF FOUNDATION.

There are at least four different types of foundations, one of which will be applicable to any conditions which may arise. The different types are as follows:

1. Building blocks throughout.
2. Concrete footing with blocks extending from the floor up.
3. Concrete footing with block laid on end and filled with concrete.
4. Concrete footing and foundation extending to about 1 foot above the grade line.

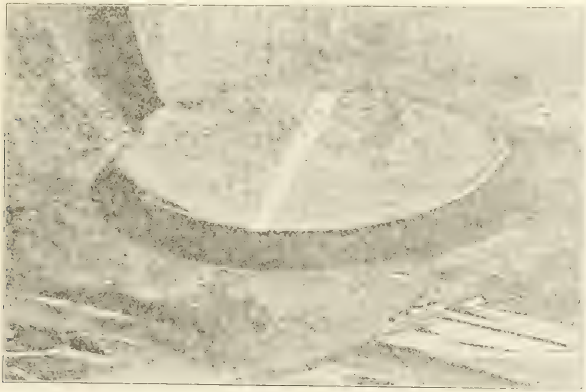


Fig. No. 12.

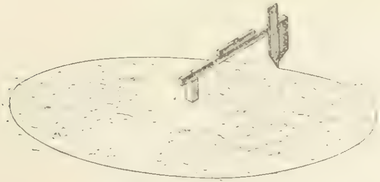


Fig. No. 13.

No. 1 type of foundation is shown in Fig. 14. The first course of the footing is 16 inches wide, made of two eight-inch blocks laid flatwise side by side. Then the next course, 12 inches in width, should consist of blocks laid flat crosswise and bedded in mortar. This completes the footing, and the third course becomes the first course of the wall.

The third and each succeeding course should be liberally mortared or plastered at the outside of the vertical joint. This reduces the liability of water getting into any course of the foundation. The lower course if connected to a drain would render any other drainage unnecessary.

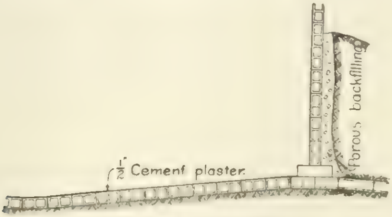


Fig. No. 14. Number One Type of Foundation. Constructed entirely of Building Blocks.

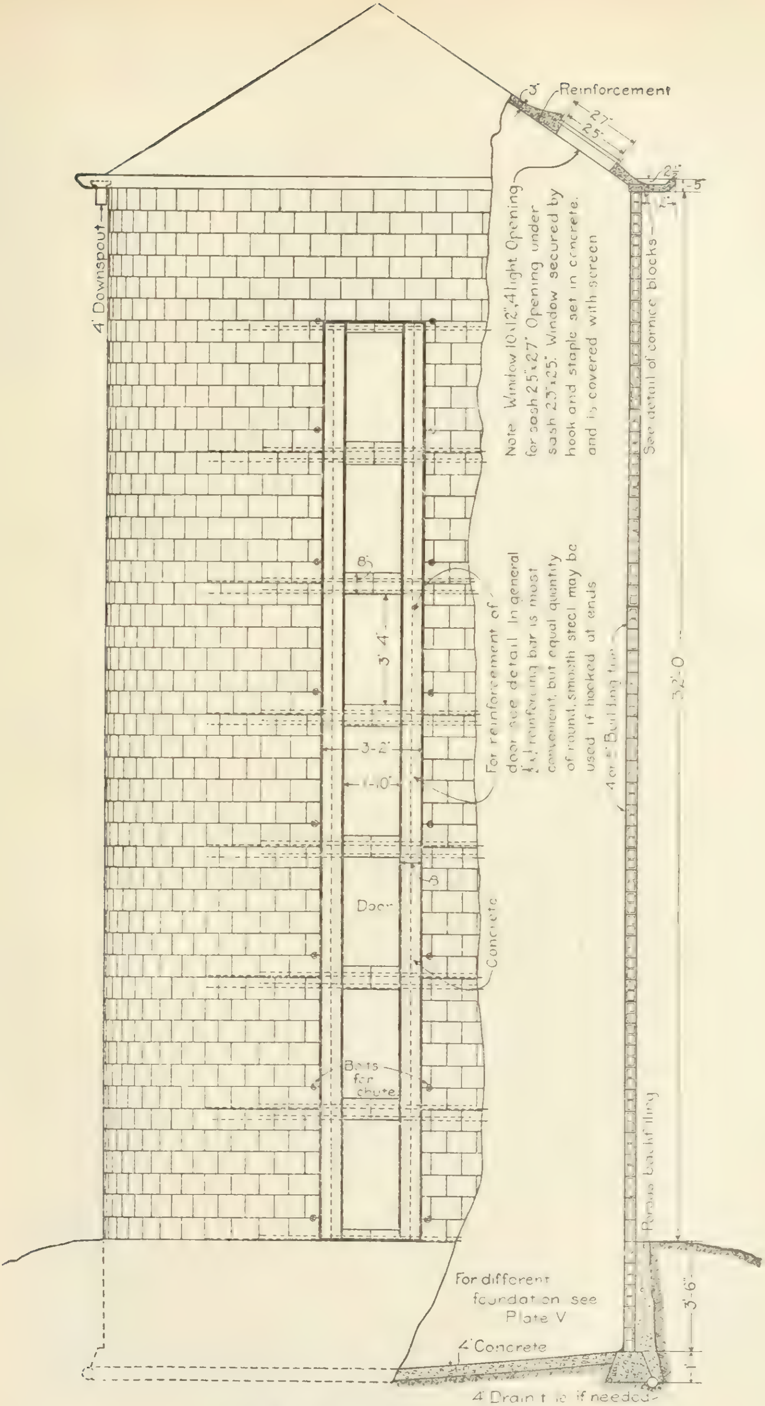
No. 2 type of foundation is shown in Plate I. This form of foundation simply consists of a concrete footing which is placed in a trench at the bottom of the pit, 12 inches or one spade deep, 8 inches or one spade wide at the top, flared to 16 inches in width at the bottom. On the top of this footing is placed the wall built of blocks.

These two types of foundation are often advisable because a form is not required for building them. Choice between Nos. 1 and 2 would depend entirely upon their relative cost. In communities where sand and gravel are expensive, No. 1 would be the cheaper.

Perhaps the greatest objection that can be foreseen to these two forms of foundation is the possibility of the blocks of the wall filling with water, which through carelessness or faulty drainage might be standing against the wall. In case water stands against the wall, it would in time seep through the faulty mortar joints into the air space of the wall, where it might do damage by freezing.

In order to prevent any such trouble, the outer joints may be left open at a point directly under the roof down spout, at which point there should of course be special provisions for carrying away all surface water which may collect. This may be easily accomplished by filling over an opening in the drain tile with coarse material, which will always permit the passage of surface water directly and quickly to the drain.

No. 3 type of foundation shown in Plate V is built with a concrete footing upon which blocks are placed on end, each course being filled with concrete as it is placed and another course placed and filled in a similar manner. This method is continued to a point at least a foot above the grade line. From this point up the blocks are laid horizontally. The advantage of this type is that the possible danger from water is obviated. More expense and work is incurred, although no material for forms is necessary.



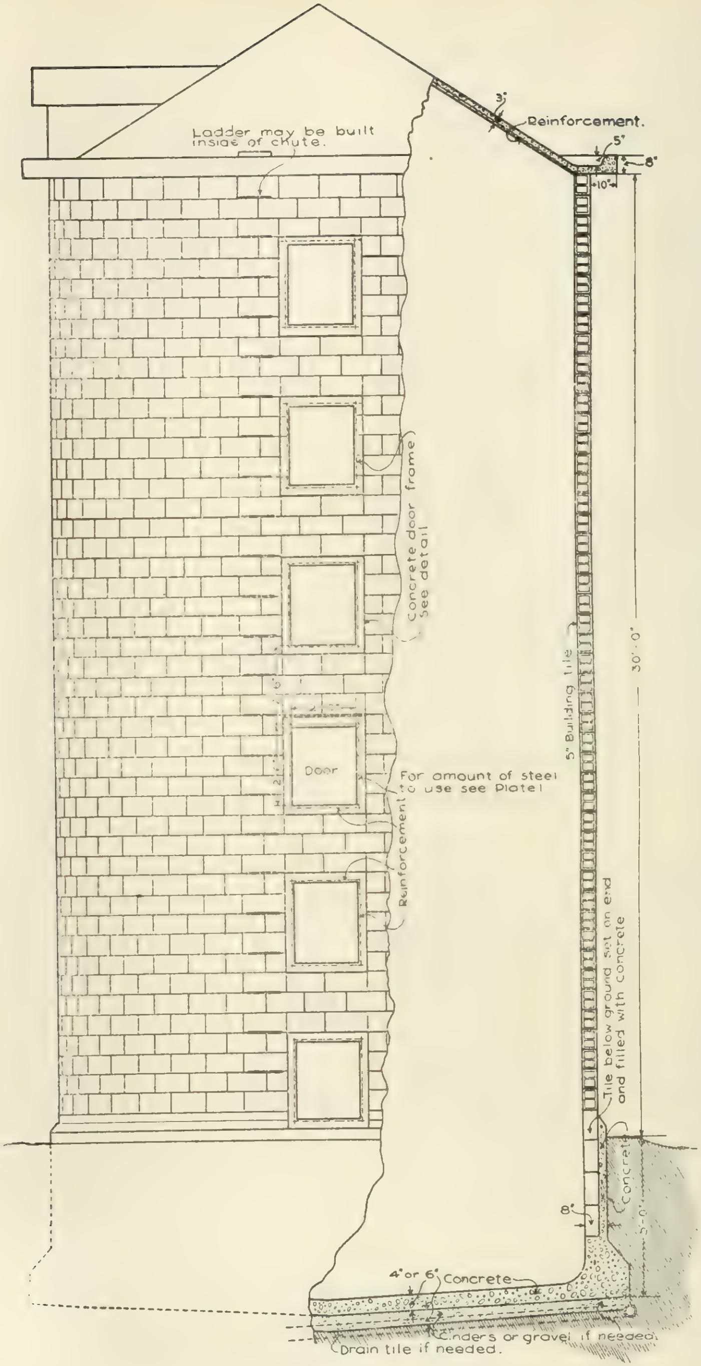
3"
Reinforcement
27"
25"
2½"
5"
1"
4" Downspout
Note Window 10x12", 4 light Opening for sash 25"x27" Opening under sash 23"x25". Window secured by hook and staple set in concrete and is covered with screen
See detail of cornice blocks
8½
3' 4"
3-2"
1-10"
For reinforcement of door see detail. In general ½ reinforcing bar is most convenient, but equal quantity of round, smooth steel may be used if hooked at ends
4 or 5" Building tile
32'-0
8
Door
Concrete
Bolts for chute
Porous backfilling
3'-6"
1'
For different foundation see Plate V
4" Concrete
4" Drain tile if needed

ELEVATION AND SECTION
IOWA SILO

PLATE 1.

Scale 5 Ft.

Continuous door

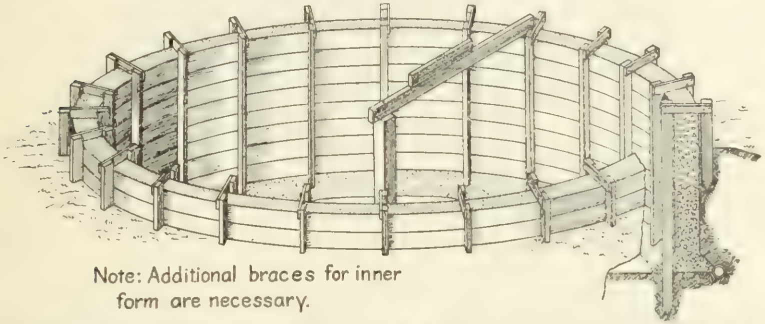

Ladder may be built inside of chute.
3"
Reinforcement.
5"
8"
10"
Concrete door frame See detail
30'-0"
5" Building tile
Door
For amount of steel to use see Plate I
Reinforcement
Tile below ground set on end and filled with concrete
Concrete
8"
5'-0"
4" or 6"
Concrete
Cinders or gravel if needed.
Drain tile if needed.

ELEVATION AND SECTION
IOWA SILO

Scale 5 Ft.

PLATE V

No. 4 type of foundation is shown in Fig. 15. Earth is utilized for the outer form, but lumber is used for the inner. By permitting this to extend down only to within a few inches of the bottom of the pit, the footing may be permitted to widen. This is desirable, as a wall need never be as thick as the width of the footing. In case the ground is reasonably level and firm, it will be cheaper to simply dig a narrow trench and widen same at bottom to 16 inches. If ground is excavated next day and concrete trimmed, a reasonably smooth job is insured.



FORMS FOR MAKING CONCRETE FOUNDATION

Fig. No. 15.

THE FLOOR.

Under certain conditions, the silo floor may be dispensed with without interfering with the preservation of the silage. Where the silo rests upon dry clay or any non-porous soil, and where the foundation is deep enough to prevent undermining by rats, the floor may be omitted. Usually, however, a floor is desirable. The portion of the silo below the ground may be made more nearly water tight, the floor may be thoroughly cleaned, and there is no mixing of earth with the silage. A silo floor need not be thick or expensive, as the weight of the silage, though very great, is evenly distributed over the surface and would be just as firmly supported if the floor was not used. A concrete floor of the usual sidewalk construction, three to four inches in thickness, will be very satisfactory. If properly graded, sand and gravel can be obtained, one part of cement to five parts of sand and gravel will be about the right proportion to use. The concrete should be thoroughly tamped and troweled.

In some cases where sand and gravel are expensive, it may be cheaper to use a clay sidewalk block or even a hollow block, the same as used in the wall, covered with thin coat of plaster. In the case of the sidewalk blocks, the plaster covering would be unnecessary if the blocks were laid in cement. The floor should be slightly hollowed in the center as a matter of economy and convenience.

THE SILO WALL.

The first consideration in the wall is the selection of the material. The material used in the Iowa silo as originally designed was rectangular, hollow, clay building blocks, such as have been commonly used extensively in important buildings for years. It was originally designed with a plaster coat of cement mortar both inside and outside. However, the experimental silo shown in Fig. 1 was not plastered either inside or out, but simply washed on the inside with a cement wash, and, for the time it has been in use, it has been entirely satisfactory, indicating that the plastering is not necessary where a tile block is used which will resist the weather. In fact, only two of the silos in the bulletin have been plastered. It is to be noted that the durability of this silo will depend directly upon the quality of the blocks. Soft blocks which have not been properly burned should be guarded against. On the other hand, good vitrified blocks are among the most reliable and durable of all building materials.

It would be difficult to overestimate the advantages of curved blocks. The only spoiled silage found near the walls of silo No. 1 was a slight amount not exceeding one to four cubic feet, or .01 to .06 of 1 per cent of the total amount. This spoiled silage was found in the recesses of the wall, which was quite rough, due to the use of long, 16-inch, straight blocks. A workman lays up the curved blocks more rapidly, and with more satisfaction than the straight block. The wall is smoother inside and out, which is of obvious advantage to the preservation of silage inside and the appearance outside.*

Five different sizes of blocks have been used in building these silos. The different sizes are shown in Fig. 16. The first two on the right are of the same size, but show two different positions in which they have been used. They are each 4x5x12 inch blocks. If laid as shown at A, they form a 5-inch wall, and each increases the height of the wall four inches, but if laid as shown at B, they form a 4-inch wall, each increasing the height of the wall by five inches. C, the next size shown, is a 4x8x12 inch block, which for ordinary silo work has proven itself more desirable than any of the other sizes used, as it forms a 4-inch wall which is abundantly strong for the purpose and each block forms an 8-inch portion of the wall. With this block less mortar is required than with any other size block because it is the largest of the 4-inch blocks commonly manufactured within the state. Thus the mortar joints are fewer than in any of the smaller blocks, while they are fully as far apart and narrower than in the case with any of the larger blocks. Also it forms a warmer wall than the smaller size blocks, as there is less material extending across the wall to conduct heat away from the warm silage. It is also easier for the mason to handle, as he can grip it in one hand conveniently, while a larger block is tiresome to handle. Also in turning a circle with a thicker block, the outer joint stands open proportionately farther. In addition to this, it has the advantage of being more easily bent than a larger block, and costs less, as such material is sold by volume.

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*The curving of these blocks is not so difficult that any manufacturer should hesitate in doing it. The authors make no pretense of being clay-workers, but have personally helped to arrange a cutting table to bend these blocks automatically. An outlay of a few dollars is sufficient to equip an ordinary cutting table for this bending. Then no other extra labor is necessary as the ends need not be cut radial and they will fit concave to convex sides, thus little difficulty will be found in setting them in the kiln.

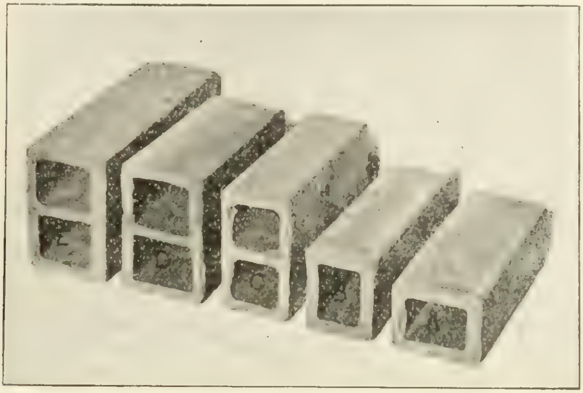

Fig. No. 16.

The next size block shown, D, is a 5x8x12 inch block. Several silos have been built of this size block, and perhaps in some it has offered a slight advantage in that the thicker wall will offer a proportionately greater resistance to the escape of heat from the silage. However, it is more expensive and difficult to handle than the matrial for 4-inch walls. The block shown at E is a 5x8x16 inch block. For general work, this size has several disadvantages. In the first place, few manufacturers make it, therefore it cannot be considered a standard material. Also, it is heavy to handle and must be bent considerably more than a short block in order to lay smoothly in a wall of the same radius. The outer joints are more open, and, if not bent, the wall is objectionably rough.

For details of construction write Engineering Department, Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa, for Bulletin No. 117.

THE SHORT-FED CATTLE AT THE INTERNATIONAL, 1908.

PURDUE UNIVERSITY AGRICULTUAL EXPERIMENT STATION BUL. NO. 142, VOL. XV.

On August 1, 1908, the Experiment Station put in a load of high grade Angus yearlings that had not received grain during the preceding winter or summer, averaging in weight at that time 737 pounds per head. They were used to secure additional data in regard to short feeding cattle during the late summer and early fall months and were shown at the International Live Stock Exposition held in Chicago in December, 1908, in competition with cattle entered in the short-fed contest by practical feeders in different sections of the country. The object of this work was to compare the results of cattle feeding at the Experiment Station with those secured by practical feeders who have had long years of experience in the business and have been sufficiently successful to enter into the International contest. The cattle were shipped to the University farm during the latter part of July and were started, on August 1, on a ration which consisted of four pounds of shelled corn, one pound cotton-seed meal and twenty pounds corn silage. Owing to the severe and prolonged drought which was prevalent over the state of Indiana during the fall of 1908, it was impossible to secure pasture for these cattle, hence it was decided to feed them on silage in connection with their grain ration. At the end of the first ten-day period they were consuming eleven pounds shelled corn and two pounds cotton-seed meal per head. This was increasd gradually. At the end of the first month they were consuming 13.5 pounds shelled corn, 3.5 pounds cotton-seed meal and 25 pounds corn silage per head daily. By the end of the second month they were consuming 14.5 pounds shelled corn, 4 pounds cotton-seed meal and 28 pounds corn silage. The maximum amount of grain was fed during the third month, which amounted to 16 pounds shelled corn and 4 pounds cotton-seed meal per head. Silage was gradually reduced during the same period, so that they consumed 20 pounds per head daily. In order to prepare them for shipment and to overcome the tendency toward paunchiness the cattle were beginning to show, the silage was taken out of the ration two weeks before shipment, clover hay being supplied in its place during the remainder of the period. On the day before shipment corn was reduced, cotton-seed meal omitted entirely and in its place the same quantity of oats was fed. On the day of shipment the amount of oats was increased to five pounds per head and the corn decreased to six pounds per head. They were watered the evening before shipment and shipped to Chicago on Novmbr 27, where they were entered in the International Short-fed Contest.

Table XII shows that when the steers were continued on the same rations there was a decrease in the rate and an increase in the cost of gains due to the higher condition of the cattle. Lot 4, which had previously been fed on shelled corn and clover hay, failed to show any improvement during the next month from the addition of cotton-seed meal to the ration. This, however, was due to one of the steers in this lot being off feed and to the extremely muddy condition of the lot in which they were fed. For these reasons the result from feeding this lot should not be considered as based upon average conditions. The results, however, are reported in order that the feeder may appreciate the influence which unfavorable conditions may have in determining the results of an experiment. Lot 6 gave results similar to those secured in previous work, which justifies the statement that when conditions are normal an improvement in the ration during the final stages of fattening results in a more rapid and a cheaper gain than where the use of the same ration is continued.

During the winter 1908-9 one lot of cattle, Lot 6, was fed on shelled corn and clover hay for six months, the results of which were reported in Bulletin No. 136. After the close of the experiment this lot, not being finished, was retained in the feed lots for one month, a change being made in the ration by the addition of cotton-seed meal. During the six months' feeding period they had made an average daily gain of 1.89 pounds per head from the use of 10.15 pounds shelled corn and 5.23

pounds clover hay at a cost of $12.35 per hundred. During the finishing period of one month the same results were secured as in previous years from improving the ration in increasing the rate of gain from 1.89 pounds to 2.90 pounds per head daily and decreasing the cost of gains from $12.35 to $10.83 per hundred. At the close of the winter feeding experiment they were valued at $6.55 per hundred. The last month's feeding required a margin of 23 cents per hundred to insure an equal profit, while the actual margin secured was 30 cents, or a profit of 7 cents per hundred, without giving credit for the manure or pork produced.

The results of all trials conducted at the station during the months of May and June, 1907, 1908 and 1909, have shown that the final month in finishing steers of good quality and breeding has added an additional profit to that secured during the winter feeding season. This has been exceptionally large where the cattle were not on the most efficient rations during the winter and which were improved during the finishing period by the use of nitrogenous concentrates.

TABLE XIII.

Showing Rate and Cost of Gains, Selling Price, Dressing Percentage and Prizes Won by Each Lot of Cattle Exhibited in the "Short-fed" Contest at the International Live Stock Exposition Held in Chicago, December, 1908.

	Crabb two-year-olds	Henderson two-year-olds	Purdue yearlings
Feed consumed	18 head 784 bus. corn, 2000 lbs. cotton-seed meal, 8000 lbs. clover hay, pasture 6 acres, 1000 lbs. Acme feed	15 head 560 bus. corn, 750 lbs. molasses, 20.000 lbs. alfalfa hay	18 head 513 bus. corn, 7,221 lbs. cotton-seed meal, 180 lbs. oats, 44,400 lbs. corn silage, 2,020 lbs. clover hay
Value of feeds	$750.00—18 head 624.99—15 head	$529.37—15 head	$586.74—18 head 488.95—15 head
Gain (15 steers)	4146 lbs.	4,200 lbs.	5377.5 lbs.
*Cost per hundred pounds gain	$15.07	$12.60	$9.09
Selling price (15 steers)	$ 7.10	$7.20	$7.70
Dressing per cent. (15 steers)	59.86	59.9	59.01

TABLE XIII—CONTINUED.

Prizes won	1st in class, $100; Rosenbaum special $100; Ingwersen special, $100 Champion silver cup	2nd prize in class, $50	1st prize in closs, $100

*Based upon the following prices:—

Corn	@	75 cents per bushel
Cotton-seed meal	@	$28.00 per ton
Hay	@	$10.00 per ton.
Corn silage	@	$ 4.00 per ton

Stock feeds and molasses feeds and pasture at prices prevalent at the itme they were used.

The accompanying table gives the result of the different lots of short-fed cattle exhibited at the show. The statement varies slightly from that presented by the various feeders, owing to the fact that the prices used for feeds were variable. In making up the table a uniform price of feeds has been used in order that the comparison may be made as nearly accurate as possible. There were two lots of two-year-old cattle exhibited and one of yearlings. It will be noticed in studying this table that the fifteen head of yearlings fed at the Station made a gain of 5,377.5 pounds as compared with 4,146 pounds and 4,200 pounds by the two-year-old cattle fed by practical feeders. This would amount to 80 pounds per steer during the four months' feeding period in favor of the methods used at the Station. The cost in producing 100 pounds gain is presented in connection with the rate of gain to show that the Station cattle made their gains at a cost of $5.98 per hundred less than the Crabb two-year-olds and $3.51 less than the Henderson two-year-old cattle. The cattle were sold at public auction on the same market, and an interesting comparison is there shown, where the Purdue yearlings sold at $7.70 per hundred, or 50 cents per hundred higher than the Henderson two-year-olds and 60 cents higher than the Crabb two-year-olds. The dressing percentage in the various lots was quite uniform, varying from 59.01 per cent up to 59.9 per cent. First prize was awarded the Crabb two-year-olds in the two-year-old class and to the Purdue yearlings in the yearling class. When it came to awarding the championship it was given to the Crabb two-year-olds in spite of the fact that the Station cattle had made 1.231.5 pounds greater gain at a cost of $5.98 per hundred less and that they were considered to be worth 60 cents per hundred more than the championship cattle on foot when bought by the same party. This would seem to indicate that the award was based entirely upon the probable dressing percentage of the cattle, without any consideration of the rate or cost of gains or the quality of the beef.

BEEF VS. MILK.

By S. W. Woods, Adair.

(Before the Adair County Farmers Institute.)

As I have been asked to write on the subject of "Beef vs. Milk," I will try to do so from different standpoints. I propose to back my assertions by facts and figures. I claim there is more profit in making beef than there is in milking. We all know that ever since this country has been settled, the making of beef has predominated to a greater extent than milking. We all know there has been money made at feeding cattle when it is done judiciously. True, there have been some failures, I'll admit, but you can trace it all to borrowed capital exclusively. We all know the larger the farm the larger the feeder. Now, gentlemen, I don't want any of you to think that I am casting any reflections on the small farmer, or renter, for if ever there was a hard-working man, it is the renter, for I was one myself and I suppose I would have been one yet had I not accumulated nerve enough to buy some cattle and commenced to feed and make beef. I have milked ever since I was eight years old and I know whereof I speak, that taking it the year round there is not a more disagreeable chore on the farm than milking.

You will all have to admit that it is only within the last ten or twelve years that there has been any money made at milking on the common farm, and the farm separator has brought this about. I claim that a man to start in with good well bred stock and will let his calves do the milking, and before the calves are weaned they should be fed some corn and oats and never let them lose their calf fat, and at the age of from twelve to sixteen months should be ready for market and you all know that what is called baby beef commands the highest price on the market and with good care and judicious feeding they should average from 1,000 to 1,100 pounds and at the present price, or the average price for the last five years for that class of beef, putting it at a very conservative price, would be six cents per pound, which would bring from $60 to $70 per head. (Now the average two-year old bullock seen on our markets today, sent from the dairy districts, is an inferior specimen, and is worth about $40.00, when the calf that is reared by the cow and fed half the grain that that calf is fed and at the same age will bring an even $100.00). I would like you to show me a herd of milk cows around here that will produce half that amount, for a cow has got to produce 150 lbs. of butter to pay for her care and keeping for one year. Did you ever stop to figure the actual cost of milking, separating and delivering your cream to the factory. If you had to hire the milking done, buy your separator, cans, buckets, etc., and have an extra team to haul your cream, or else stop a team from the farm, and you farmers know what that means, for the average farmer has to haul his cream from three to five miles to the creamery, which takes half a day three or four times a week; (will give you the figures later). On the other hand, a man can attend to his thirty cows and calves in not to exceed 20 minutes each morning and evening and after the calves are weaned, if he has his self-feeder, he can raise the slides and feed them in ten minutes. But right here let me say, gentlemen, that is not the right way to do. You ought to see that they all eat and stay with them awhile for they enjoy good company and will soon try to see which can get the closest to you and will want you to rub them. Of course, it will take some time to put the grain in the feeder, but not half the time it takes to go after the cows every morning and evening to get them up to milk, for if there is anything pleasing to the eye, or healthy for the stomach, it is to grab an old milk pail twice a day for seven days in a week, for it has got to be done at a certain time or the old cow will not give down her milk. Oh, it is pleasant to sit down to an old cow and have her lash you in the face with her old tail when you are all wet with sweat, for if there is anything that will make a person hot it is to sit down to milk a cow when she is warm, especially a hot sultry morning when the flies are bad; "Oh, it is a pleasant job!" Is it any wonder that there are so many of our farmers' sons and daughters leaving the farm to seek other employment? Admitting, gentlemen, that they are equal from a financial view, which would you prefer, the slap of an old cow's tail 365 days in the year, or go to feed a nice bunch of calves? I will take the latter in mine and those who wish can do the milking.

While prices at public sales are no criterion to go by, yet they do form some basis of what stock is worth. At one sale, not very far from Adair, this fall, the man had some yearling steers he had raised on skim milk the year before, so this year he thought he would let his calves do the milking and the result was the sucking calves sold for the most money. At another sale which I was at, the last of December, the man had 12 steers that were two's and I should judge by their looks that some of them were two then, and they sold for $25.80 per head; not half what ours sold for the 16th of last June, but they were separator-milk calves. Dairying has become quite a business of late but it has glutted the market with cattle that the stockyard's men call "clothes frames" and I think a very appropriate name, too.

Gentlemen, you will have to pardon a personal illustration, for I am not going to quote quotations from other men on this, but I am going to give you facts and figures from my own experience. The most of you know we feed every winter and part of the summer. We feed calves but they are whole-milk calves, for I would not attempt to feed a bunch of separator milk calves if you would put them in my feed yard free of charge, for I would consider half of my grain thrown away. We generally put two calves to a good cow and I claim she makes us more money than by milking her. Our 23 head of calves at weaning time were worth $325.00 ($14.00 per head), that is all we could get for them at that time. The hay they consumed,—20 tons at $6.00 per ton, $120.00; pasture until the 16th of June, $25.00; corn and oats, $650.00 (1,100 bu. corn at 50c and 300 bu. oats at $100.00); pasture for 15 cows for 7 months, $140.00 and for 8 extra calves $40.00, as 15 cows raised our 23 head of calves. Total cost of calves, $1,275.00. The 16th day of June when calves averaged 14 months old they weighed 906 pounds each and brought us $1,387.00. Corn and hay marketed at home worth $200.00; pork made by feeding (according to tests made) $200.00 to say nothing of the fertilizer that you get from feeding. Total $1,787.00, less cost of calves and feed, $1,275.00 leaving $512.00.

Now a little expense on the milking side: We have 30 cows and they require 70 acres to pasture them, which is worth $280.00; the expense of milking would be $1.80 per day and for 30 days, $54.00 and for 7 months would be $378.00; man and team four half days per week would be $5.60 and for 30 weeks would be $168.00. The life of a separator is estimated at five years, say this would be $20.00, cans, pails, etc., and now the cleansing of the separator and cans, buckets, etc.—oh, well, the good woman of the house can do that, that does not amount to much, but gentlemen, is her time not worth as much as yours? I say it is, for it is no easy job to take a separator apart, to wash and scrub and cleanse everything properly, will just take her one hour every day for 210 days. I suppose you would be willing to give her $25.00 for her work, would you? That would cost you $871 for you to get your cream to the factory. Now, then, the average cow in the United States produces 170 lbs. of butter per year, and if it takes 150 lbs. of that to pay for her keeping and care, don't you think there is a great deal of money made at keeping a cow for 20 lbs. of butter at 24.4 cents per pound, as that is the price according to government reports for the last twelve months.

Beef vs. Milk. I will feed the calves and make beef and those who wish can do the milking.

MARKET CLASSES AND GRADES OF SHEEP.*

U. S. Department of Agriculture, Farmers Bulletin 360.

A recent bulletin of the Illinois Station, by W. C. Coffey, defines and illustrates the various classes and grades of sheep recognized on the Chicago and other large markets. The information is intended to aid those engaged in growing and handling sheep to understand and apply the market reports.

"The grower or feeder offering sheep for sale often forms a very imperfect estimate of their market value, and chiefly because his contact with the open market has not been sufficient to familiarize him with the factors embodied by the various terms in market reports. * * * Because his judgment as to the true market worth of his sheep is uncertain, the owner may suffer a financial loss in dealing with a local buyer by selling under the market value or by missing a sale by asking too much for them. If, at the time of sale, the owner could definitely determine the value of his sheep, he would experience less difficulty in coming to an early understanding with the local buyer, or in case he shipped them direct to the open market, the chances for disappointment and dissatisfaction would be greatly reduced. While it is the privilege of a few to visit the markets often and there learn the requirements and the demands for the different grades in the various classes, the great majority of sheep owners, and many feeders, must depend largely upon the market reports for such information, and the value of these reports to the man who proposes to buy or sell sheep is determined by the extent to which he can apply them to his particular purchase or sale."

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* Compiled from Illinois Sta. Bul. 129. For classification of other farm animals see U. S. Dept. Agri., Farmers' Buls. 222, p. 24; 334, p. 22.

MUTTON SHEEP.

Under this head are classed "all sheep and lambs sent to market for slaughter, no matter what the condition, age, or weight," including both native and western sheep.

"Native sheep are those produced, ordinarily in small flocks, on the farms of the Central, Southern and Eastern states. Western sheep are those produced, usually in large bands, on the ranges of the Western states. As a rule, western sheep have enough Merino blood to make them markedly different in appearance from natives which are mostly from mutton-bred parents. But even were they identical in breeding, buyers and salesmen on the market could easily distinguish between them because of differences resulting from the way in which they are fed and managed. On markets where both native and western sheep are received, the daily reports nearly always distinguish between them, but in this bulletin no attempt is made to classify them separately where they are both put to the same use. Hence both native and western sheep are placed in the mutton and in the breeding classes, but only western sheep are placed in the feeder class. While thin natives are often bought up in the country and successfully fed, those that reach the market in low condition do not sell as feeders because they are usually infested with internal parasites, thus making it difficult and in many instances impossible to fatten them."

It is stated that a common practice is "to prefix the word 'fed' before a certain class and grade to distinguish grain from grass-fattened sheep. The term is used for a short time in the autumn and in the spring when both grain and grass fattened sheep are coming to market."

LAMBS.—Of the various subclasses of mutton sheep "the one known as 'lambs' is by far the most important, due to the fact that the producer can most profitably market his sheep as lambs and also that lamb is preferred to mutton by the consumer. * * *

"It is estimated by traders upon the Chicago market that at least 80 per cent of the sheep received at that place are lambs. * * *

"At from 12 to 14 months of age lambs pass into the yearling and ewe classes. But it is the degree of maturity the young animal has attained rather than a set, definite age which determines whether or not it belongs to the lamb class. Native lambs usually reach maturity at an earlier age than western lambs, because they receive a greater abundance of feed, and they are generally free from Merino blood. * * *

"The most important factors in determining the grade to which lambs belong are form, quality, condition, and weight, and the grades recognized on the market are: Prime, choice, good, medium, common, or culls.

"It is understood that when lambs are graded as prime they are the very best of the class that may be generally expected on the market. * * *

"Before a lamb is graded as prime it is determined by sight and touch that it possesses the form, quality, condition, and weight demanded by the dealer in high-class mutton. The butcher demands the form that shows the most development in the loin, back, and leg of mutton. He demands development in these regions because they are the parts from which the high-priced cuts are secured. The animal should show a great deal of depth and breadth and no tendency to be paunchy, because paunchiness adds to the percentage of waste in slaughtering. The prime lamb should present a general fullness and smoothness of outline, both of which indicate thickness and evenness of flesh. There should be an absence of roughness because the waste in the dressing of the rough, ungainly lamb is large in proportion to the carcass, and, furthermore, the appearance of the carcass of such a lamb fails in attractiveness when placed on exhibition in the market. It is generally conceded that form is enhanced if the body is supported by short legs. However, many prime lambs have only moderately short legs. Very long legs detract from the dressed yield and from the appearance of the carcass when displayed, and on this account lambs that are decidedly upstanding do not grade as prime. * * *

"General quality is indicated by a medium sized, clean-cut head, ears of fine texture, and fine but strong bone, a light pelt, and full, well-rounded outlines. All these suggest a freedom from that coarseness which adds to the waste in dressing, and the unattractiveness which works against the value of the carcass. Of the items of general quality enumerated, lightness of pelt is the most essential. By pelt is meant the skin and wool combined. To secure a pelt of light weight, the skin should be comparatively thin and free from folds or wrinkles, and the wool should not be very dense or oily. * * *

"The weight of a pelt may be appreciably influenced by the condition of the wool with reference to foreign material and moisture in it," the presence of large amounts of these greatly reducing the price that will be offered.

"Occasionally the general quality of lambs may be developed to such a marked degree that they will sell as prime, even though they be somewhat deficient in form. A notable example is the fat Mexican lamb. From the standpoint of form the Mexicans are not especially attractive, since they are upstanding and have narrow bodies and long necks, but they are unequaled in the fineness of their features and their lightness of pelt. Without their high development of general quality they would not receive favorable consideration from buyers, but because of it, when fat, they top the market.

"The terms 'quality' and 'condition' are frequently used interchangeably on the market, and chiefly because the quality of flesh is largely dependent upon condition. By condition is meant the degree of fatness of a lamb. The reasons why a lamb should be fat are: (*a*) Other things being equal, there will not be as high a percentage of offal as in the half fat or the thin lamb; (*b*) the fat adds to the attractiveness of the carcass, and thus makes it more inviting to the purchaser; (*c*) the comparatively fat carcass loses less in weight in the process of "cooling out' in the refrigerator and also in cooking; (*d*) some fat on the outside of the lean meat and a considerable amount deposited through it adds to its palatability by making it more juicy and of better flavor.

"Desirable quality of flesh is indicated by firmness along the back, at the loins, over the sides, and at the leg of mutton. * * * While the flesh should have that firmness which would impress an inexperienced man as being hard, it should have just enough springiness to yield slightly to the touch. * * * The development of fat essential to the prime lamb is indicated by a thick dock, a full, mellow purse, thickness and smoothness on the back and over the ribs, fullness at the neck and flanks, and a plump, well-filled breast.

"It is impossible to tell with exactness, by merely looking at it, the condition of a lamb in the wool, and hence it is necessary to judge condition by placing the hands on the animal. Experts rely upon placing the hand but once, for example, by spreading the hand so that the back and ribs will be touched by one stroke, or by grasping the loin, or by getting the thickness and fullness of the dock, but none risk their judgment upon sight alone. A great deal is determined by the stroke that touches the back and ribs because it not only reveals the condition as evidenced by the degree of smoothness present, but also the amount and quality of the flesh by the thickness and firmness of it. This stroke also aids in determining the kind of pelt a lamb may have with respect to thickness of skin, density of wool, and foreign material in it.

"Weight is a factor that varies somewhat with the different seasons in the year, but in general the lamb of prime quality and condition and weighing 80 pounds sells at the highest price. When spring lambs first appear on the market, they weigh little more than 60 pounds, but if they have the quality and finish, they easily command top prices."

The requirement of form, quality, and condition in case of prime lambs apply also in case of prime yearlings, prime wethers, and prime ewes.

"To grade as choice, lambs can not fall below the requirements for prime lambs to any marked degree. They must have the form, quality, and condition that make them desirable as mutton of a high class. They usually fail to sell as prime lambs because they are not quite up to the standard in quality, condition, or weight. While lambs frequently fail to grade higher than choice because of their quality or their weight, a lack in condition is most often the retarding factor. This is the grade that includes by far the greater number of the better offerings upon the Chicago market. * * *

"Upon the market, buyers and salesmen often prefer to speak of a band of lambs as being 'good to choice' rather than using either of the terms separately to describe them. This, doubtless, is partly due to the uneveness in bands of lambs, which suggests two grades rather than one. If there is a pronounced unevenness in an offering, that alone is sufficient to prevent them grading better than good. But the individual lamb must be noticeably deficient in form, quality, condition, or weight, or slightly deficient in each, thus making a lower grade through a combination of deficiencies."

Lambs of the medium grade lack to a large extent the condition and quality necessary in the prime lamb.

"It is in this grade more than any discussed above that faulty form is apparent. Long, loosely coupled bodies, with little spring of rib, and rough outlines are frequently seen. Because they are coarse, underfinished, and often paunchy, they do not dress a high percentage, and what they do produce is without sufficient fat to meet favor with dealers who handle high-class mutton. Only the coarser, heavier pelted western lambs are found in this grade, as the smoother, tidier range lambs in underfinished condition are sold to go to the country as feeders. Many native lambs, however, come in this grade, because those appearing on the market in low condition or those on the coarse, 'bucky' order are not sought as feeders."

Lambs are in the common or cull grade chiefly because they are very far below that condition of flesh that would make them desirable for mutton.

"Coarse, ill-shaped lambs commonly belong to this grade, but not unless they are noticeably lacking in quality of flesh and amount of fat. Offerings in this grade are very light in weight, the range, with the one exception (coarse, 'bucky' natives), being from 30 to 50 pounds."

As practically all native lambs appearing in the market go to slaughter, while thinner native lambs are sent to the country as feeders, natives form the bulk of the common or cull lambs.

"Under present methods of sheep husbandry, it is impossible to send all native lambs to market in desirable condition, because growers of natives have not yet learned how to keep them free from infestation by internal parasites, and when they are infested to any great extent they do not take on fat.

"In both the common and medium grades are frequently seen what are known as coarse, 'bucky' native lambs. These are the result of careless shepherding on the part of growers. If lambs are left entire they rapidly become coarse when their sex instinct develops, and because of this coarseness and the loss of fat resulting from a great amount of freatful activity, they are undesirable as mutton. * * * Growers of natives would save much to themselves annually if they would make it a practice to castrate their ram lambs a few days after they are born. These coarse, 'bucky' lambs are heavier than the bulk of common lambs, as they sometimes weigh as much as 100 pounds.

"The term 'cull' is common parliance in sheep market circles, but it has a double meaning. One applies to the lowest grade under a given class, and it is in this sense that the writer uses the term; the other, to the number a buyer may have the privilege to reject when purchasing a band of lambs or sheep at a given price. Therefore, in defining the lowest grade of lambs, the term 'common' is less confusing than the term 'cull.'"

Yearlings.—Yearlings of a certain grade are used as substitutes for lambs in the meat trade.

"The ability of the animal to substitute in this way depends upon its weight, quality, condition, and immaturity. An index greatly depended upon for identifying the carcass of a young sheep, or lamb, is what is known as the 'break joint,' which is found immediately above the pastern point. The leg easily severs at the 'break joint,' leaving a reddish, porous, indented surface, over which there is a slight, viscid-like secretion easily noticeable to the touch. The presence of this joint in the live animal is best determined by feeling just above the pastern joint for a bonylike prominence, which is a true indication of it. It disappears when the sheep becomes mature, and a sheep that does not have it can not class as a yearling. The yearling class is composed exclusively of wethers, because the 'break joint' disappears in ewes at about the time they pass out of the lamb class. Lambs born the year previous to the time they appear on the market pass out of the lamb class about July 1, and from that time the wethers are called 'yearlings' until they are too far toward maturity to 'break,' as the salesmen and buyers familiarly refer to the 'break joint.'

"Yearlings are commonly designated upon the market as 'lights' and 'heavies.' These terms, as they would indicate, refer to weights. Thus we frequently hear the phrases 'prime lights' and 'prime heavies,' by which is meant the quality and condition of animals coming within certain limits of weight rather than their desirability as mutton. And, hence, it is felt that 'light' and 'heavies' are not strictly logical terms upon which to base graduations in this class.

"Since yearlings are used to take the place of lambs, the nearer they approach the quality, condition and weight of prime lambs the more satisfactorily will they accomplish the purpose for which they are intended. Any great departure in any of the above characteristics as applied to prime lambs will seriously affect the desirability of yearlings, and if they are low in condition they are practically out of consideration as such."

The grades of yearlings are prime, choice, and good.

"Yearlings, to grade as prime, must be highly developed in form, quality, and condition, and of a light, handy weight, which ranges from 70 to 90 pounds. The form of the prime yearling embodies symmetry, compactness, roundness, and smoothness, with no suggestion of uneven lines or prominent parts. Unless such a form is secured, the carcass will appear too great in size to look like a lamb. In general quality the requirements are fine, clean-cut features and a pelt of light weight. As with prime lambs, so with yearlings, a high dressed percentage is demanded, and this is not possible with the animal having very coarse features and a heavy pelt.

"The most important considerations in placing a yearling in the prime grade are quality of flesh and the amount of fat it carries. Slight concessions may be made to a lack in general quality and form, but none to a lack in fat. Unless fat, the yearling is unsatisfactory, hence buyers discriminate sharply against those not showing a high finish.

"Since it is difficult to secure the most desirable form, quality, condition, and weight combined in one animal, choice yearlings outnumber those of the prime grade. Any noticeable departure from what is considered prime in any of the above characteristics is sufficient to place a yearling in the choice grade. During the winter season, when the offerings of sheep are almost wholly grain fattened, the greater number of yearlings are in prime condition; but at all times there are offerings that are not of the most desirable form, quality, and weight. * * * Those of more than 90 pounds weight, although they may be in prime condition, rarely grade better than choice. * * * There can not be a great difference between the condition of prime and choice yearlings, and, in fact, the total difference between them is not great.

"Undesirable quality, weight, or condition, or a combination of deficiencies in any two or all three of the above, will, if readily apparent, place a yearling in the good grade. With a few scattered exceptions this is the lowest grade of yearlings offered as mutton. Yearlings of 110 pounds and upward rarely grade better than good, even though they be prime in every other respect. Ill form, general coarseness, and undue weight of pelt are all serious objections, and those having such defects are nearly always placed in this grade. A rather frequent combination, placing yearlings in the good grade, is underfinished condition and undesirable quality. If yearlings are assigned to this grade solely because of a want of fat, they are almost on the border line between the mutton and the feeder class, and are not much wanted by either packers or feeder buyers."

Wethers.—Mature castrated males compose this subclass.

"Since comparatively few native wethers appear upon the market, this class is looked upon as chiefly a western product. * * *

"The same conformation, quality, and condition are demanded in prime wethers that have already been noted as characteristic of prime yearlings. The most desirable weights range from 95 to 110 pounds, and are popularly known as 'light handy weights.' However, wethers weighing 140 pounds and upward frequently grade as prime if their heavy weight is accompanied by desirable conformation, quality, and condition.

"The choice wether is usually slightly short of prime in form, quality, and condition. Quality in this instance applies more particularly to lightness of pelt and to freedom from paunchiness than to coarseness of feature. Wethers of this grade must also come under the light, handy, or the heavy weights. Choice wethers are used in the same way as prime wethers, and both are sought by dealers in high-class mutton.

"Good wethers are characterized by coarseness and lack of prime condition. They do not command the highest prices because they do not dress a high percentage of marketable meat nor yield a quality of mutton satisfactory to a high-class trade. If wethers are pronounced in their weight of pelt, but covered with thick fat, they will come in this grade unless of undesirable weight. Frequently wethers of choice condition and quality, and weighing 120 to 135 pounds, are placed in the good grade because their weight is not adapted to the purpose for which they are desired. They are too heavy for light, handy purposes, and too light for heavy carcass purposes."

The common grade is made up of wethers of inferior quality and in perceptibly underfinished condition.

Ewes.—In this subclass are included yearling ewes, surplus breeding ewes, and those no longer useful for breeding purposes.

"As these different sources indicate, there are wide differences in the age, condition and weight of the various offerings of ewes appearing on the market.

"Ewes do not sell on a par with wethers, because they have proportionately a greater percentage of offal and a smaller amount of lean meat. Except in times of urgent demand for mutton, prime wethers sell for at least 50 cents per hundredweight more than prime ewes. However, when the demand for mature mutton is strong the difference is often no more than 25 cents. * * *

"Smooth, highly finished native and western yearling ewes, and a very small number of well-bred, aged native ewes, of prime quality and in prime condition, comprise the offerings in [the prime] grade. Since the bulk of yearling ewes are sold for breeding purposes, the total offerings of prime ewes are small. Prime yearling ewes may be not entirely above criticism in quality and condition, but because they are light in weight they meet with ready sales. The strongest demand is for weights not greater than 100 pounds. However, large, smooth, aged ewes in prime condition sell as prime ewes. * * *

"Ewes of [the choice] grade must show development to a high degree in form, quality, and condition, as they are placed to the same use as prime ewes. They may be slightly faulty in quality, condition, or weight, but they are usually criticised for their lack either of quality or condition. Grain-fattened western ewes frequently sell as choice.

"Good ewes are appreciably open to criticism in condition and often in quality. In most seasons of the year ewes choice in condition and quality, but of the unhandy weights ranging from 115 to 130 pounds, are also placed in this grade."

Underfinished condition and advanced age are usually evident in the medium grade. "Often ewes and their lambs are sent to market together. Ewes in such shipments are frequently too low in condition to be above the medium grade."

Offerings of the common or cull grade are pronounced in their lack of condition.

"Toothless old ewes, too decrepit to make use of feed, and thus regain desirable condition, are slaughtered for the cheapest class of trade. As the winter season advances a number of ewes appear on the market well advanced in pregnancy. Such ewes, although they may be of choice quality and condition, sell as common ewes because of their high percentage of waste and the ill effects pregnancy is said to have upon the color of the carcass."

BUCKS AND STAGS.

"On the market rams are designated as 'bucks.' Stags are males castrated later than the lamb stage of life, and they sell on a par with bucks. Strictly speaking, bucks are not graded, although the terms 'choice,' 'good,' and 'common' are frequently used."

FEEDER SHEEP.

"Whenever sheep are too low in condition to suit the needs of the packer, they fall into the feeder class, unless they be extremely coarse in quality or weakened in vitality because of disease or advanced age.

"The heavy run of feeder sheep occurs in the months of September, October, and November, when rangemen are reducing their flocks and preparing for the winter months. However, buyers are constantly looking for thrifty, underfinished stuff, and a limited number of feeder sheep go out from the market every week in the year. * * * Practically all the sheep sold as feeders are grown on the western ranges. * * * The following are the recognized subclasses of feeder sheep: Lambs, yearlings, wethers, ewes."

Lambs.—Feeder lambs are those thin in flesh left after sorting out those in a band in suitable condition for the mutton trade. The grades recognized on the market are fancy selected, choice, good, medium, common, or inferior.

"Fancy selected feeders must not only possess the characteristics of choice feeders, as noted (below), but in addition they must be uniform in breeding and markings, and show an unusual amount of mutton blood for range lambs. Their quality, as evidenced by clear-cut features, clean limbs, light and smooth pelts, must be practically above criticism. They are nearly always slightly higher in condition and heavier than the average run of feeder lambs, ranging in weight from 65 to 70 pounds, and in that state of thrift where gains can be placed on them rapidly. If properly handled, they are the grade of feeders that will finish quickly into prime lambs. Not many of this grade of feeders are to be found on the markets. * * *

"Choice feeders will develop into choice and prime mutton lambs if properly managed. Of the grades that come to the notice of buyers generally, they are probably more uniform than any other, and in order to get a fixed standard from which to make comparisons, this grade is described in detail.

"What the buyer expects of choice feeders is the ability to finish into prime or choice mutton lambs, and to produce gains at economical figures. The selection of such lambs is based upon form, quality, constitution, condition, and weight.

"In general, the form should be deep, broad, well knit, of medium length and low set. This conformation indicates early maturity, good constitution, capacity for growth, and a likelihood of finishing into an attractive carcass with a relatively high percentage of valuable cuts. * * *

"Quality is a very important consideration in the selection of feeder lambs, and it is that characteristic which is manifested by a medium-sized, fine, clean-cut head; medium-sized and moderately thin ears; the hair on the face and legs fine and silky; bone that is fine and without coarseness at the joints; skin thin and without folds or wrinkles. A smooth skin without folds or wrinkles and carrying wool of moderate weight is the most important requirement of desirable quality in feeder lambs. * * *

"The conformation which indicates a strong constitution was described above under 'Form.' A wide, deep chest, fullness in the heart girth, depth and breadth of body indicate sufficient space for well-developed vital organs, or strong constitution. Another important point, which if not a part of constitution is closely akin to it, is thrift. The intelligent buyer of choice feeders rejects all lambs that appear in the least unthrifty, such as lame ones and those inclined to lag behind when the band is moving."

Choice lambs should be fairly full in their outlines and without any suggestion of emaciation. Choice feeder lambs range in weight from 55 to 62 pounds.

Good feeder lambs are usually more leggy and coarse than those that are considered choice. Lambs weighing between 50 and 55 pounds and choice in form, but somewhat, although not excessively, heavy in pelt, are placed in the good grade.

Lambs of the medium feeder grade often have very heavy pelts, and hence lack appreciably in quality.

"Pronounced legginess and angularity of form are frequently noticeable in bands of lambs grading as medium, but the chief discrimination is against their quality because of their thick, wrinkled skins and dense, heavy fleeces. While in most cases they are thrifty, they are usually below the weight most desirable in feeder lambs, and this, together with their lack of quality and desirable form, places them considerably below the choice feeder."

The lambs most common to the grade of common or inferior feeders are little, light, late-born, weak lambs.

"They are known under several appellations, such as 'bums,' 'culls,' 'pewees,' and 'peanuts.' Their weight may vary anywhere from 25 to 45 pounds, and because of their tender age, light weight, and weakened condition they require skillful care and a long period of feeding upon nutritious feeds that will produce a large amount of growth as well as fat."

The demand for this grade is limited.

Yearlings.—This class is made up exclusively from yearling wethers. They do not figure prominently in the feeder trade. They are graded as choice, good, common.

Wethers.—Of the wethers sold from the range for feeding purposes the greater number is shipped direct to western feed lots, hence the supply on the Chicago market is extremely meager. The grades are choice, good, medium, common.

"To be considered choice feeders, wethers must be of good conformation, highly developed in quality, and uniform in weight and condition. * * * The choice feeder wether should be of a light, handy weight, which ranges from 80 to 90 pounds."

Good feeder wethers should be uniform in weight and condition, and not open to serious criticism in conformation and quality. Wethers of this grade are usually inferior to those of the choice grade in quality or condition.

Wethers of the medium feeder grade are usually criticised for their lack of quality and condition. Medium feeder wethers are likely to be large of frame, and although not heavy at the time of purchase because of their thin condition, they are heavy wethers when marketed as mutton.

Extremely coarse wethers with heavy pelts, stags, the result of castrating mature rams, and very old wethers are included in the common feeder grade.

Ewes.—"When there is a slow demand for breeeding ewes * * * the yearling ewe lops off into the feeder class. Of the mature ewes sold as feeders, the larger number are those that have spent their usefulness as breeders on the range. They vary considerably in condition, quality, and general thrift, and all feeder ewes may be graded as follows: Choice, good, medium, common."

Most of the yearling ewes offered as feeders are placed in the choice grade.

"They are of choice quality and in that degree of condition at which gains are put on rapidly and early give a degree of desirable finish. They weigh from 70 to 80 pounds, and when finished yield a neat, handy weight carcass. Smooth, aged ewes of good form and in medium flesh are also placed in this grade."

To grade as good, feeder ewes must be smooth and healthy, and their teeth must be sound.

Ewes of the medium feeder grade may be lacking either in quality or thrift. If unthrifty, they are usually broken mouthed and in low condition.

"Common ewes are very old and so depleted in condition that they approach emaciation. As a rule, their front teeth are gone or worn so low that they are of little use. Only the best of care and feed will secure gains on ewes of this grade."

BREEDING SHEEP.

Native and western ewes are included in this class in about equal proportions, but breeding bucks are exclusively natives.

"*Ewes.*—The ewes most sought after are 2, 3, and 4-year-old dark-faced natives in ordinary field condition. * * * Many of the ewes offered for breeding purposes are yearlings, but they are not as desirable as 2 or 3 year old ewes, because they are immature and likely to be unsatisfactory as mothers at their first lambing. The native yearling is heavier and more nearly mature than the western yearling, and she meets with a correspondingly better sale. The offerings on the market come under the following grades: Fancy selected, choice, good, common.

"Only a few of the breeding ewes sold out of the market can be regarded as fancy selected. * * * Such ewes are high grades of some of the Down breeds, usually Shropshire, and in addition to being thrifty and sound, they are uniform in quality, conformation, fleece, and style."

The greater number of more desirable breeding ewes are of the choice grade. Choice ewes should be 2, 3 or 4 years old, sound in mouth and udder; Down breeds preferred.

"The smooth, low-set, symmetrical ewe is preferred over the angular, upstanding ewe with uneven top and lower lines. * * * Choice breeding ewes should have smooth, rather refined features and bone of medium size. * * * While choice breeding ewes should be thrifty and active, fat is not desirable. * * *

"Several factors combined cause breeding ewes to grade as good, such as undesirable markings, age, weight, conformation, and condition."

Common breeding ewes are on the border line between breeders and feeders. They show no single line of breeding. In many instances they are noticeably advanced in age.

"*Bucks.*—While the rams sold out of Chicago market as breeders vary in age, weight, and markings, there are no recognized grades. Those most sought after are dark-faced, smooth, low-set, vigorous-looking rams of a year or more in age. * * * Inspection of rams selected for breeding out of the open market reveals the fact that the greater percentage show undesirable form and a mixture of breeding."

MISCELLANEOUS.

"*Hothouse lambs (spring lambs).*—The term 'hothouse lambs' refers to those produced early and marketed before the general run of spring lambs start to market, which is about May 20. * * * 'Hothouse lambs' are most in demand from Christmas until Easter. They must be fat and weigh between 40 and 55 pounds.

"*Export sheep.*—Most of the sheep selected for export are the heaviest of their class. They are usually in prime condition and of the choice grade. Wethers are preferred, but ewes, yearlings, and lambs are also taken, hence the term 'export' can not be said to apply to any particular subclass of mutton sheep. Many buyers use the term freely to designate wethers, yearlings, ewes, and lambs heavy in weight and prime in condition, whether they be taken for export or not.

"*Throw-outs.*—This is a term applied to lambs rejected as feeders. After a band of lambs has been divided into the mutton and feeder classes, the purchaser of the feeder end usually has the privilege of rejecting those not suitable for feeding purposes. Lame lambs, those appearing unthrifty, entire males, those large enough to be suspiciously near the short yearling age, and frequently black lambs make up the rejections. * * * Throw-outs are often called 'rejects,' but they are never known as 'culls' or by any of the terms which denominate the grades under the regular classification. Sometimes they sell on a basis of cull lamb prices, at other times upon that for medium lambs.

"*Dead sheep.*—These are sheep that meet with death in transit. Losses are greatest in warm weather, when deaths are frequent if close crowding in the car is practiced. * * * Dead sheep have a value chiefly for their wool. The best are worth 25 cents per head. It is claimed that 50 per cent of them are worthless on account of the wool being mangled and trampled off.

"*Goats.*—Goats are sold for slaughter provided they are in good condition, but they do not sell on a par with sheep. Only a few are sold on the Chicago market, and hence they are not graded."

The different classes and grades which have been described are summarized in the following table:

Summary of classification of sheep.

CLASSES.	SUBCLASSES.	GRADES.
Mutton sheep (native and western sheep)	Lambs	Prime. Choice. Good. Medium. Common or culls.
	Yearlings	Prime. Choice. Good.
	Wethers	Prime. Choice. Good. Common.
	Ewes	Prime. Choice. Good. Medium. Common or culls.
	Bucks and stags	Choice. Good. Common.
Feeder sheep (western sheep)	Lambs	Fancy selected. Choice. Good. Medium. Common.
	Yearlings	Choice. Good. Common.
	Wethers	Choice. Good. Medium. Common.

SUMMARY OF CLASSIFICATION OF SHEEP—CONTINUED.

CLASSES.	SUBCLASSES.	GRADES.
Feeder Sheep (Western Sheep)—Continued.	Ewes	Choice. Good. Medium. Common.
Breeding sheep (native and western sheep)	Ewes	Fancy selected. Choice. Good. Common.
	Bucks	(Not graded.)

Miscellaneous:

- Hothouse lambs.
- Export sheep.
- Throw-outs.
- Dead sheep.
- Goats.

FATTENING LAMBS.

JAMES W. WILSON.

The live stock industry has been and is a prominent factor in solving the problem of retaining and improving the fertility of the soil. It has been demonstrated that raising crops year after year on the same land and selling them in their natural form, without the use of animals to produce manure, materially impairs the producing capacity of the soil. Commercial fertilizers are used extensively farther east, which render the cost of production comparatively expensive.

Roberts, of the New York Experiment Station, found that sheep manure was worth more per ton as a fertilizer than that made by any other farm animal.

To sheep belong part of this credit as economical producers, requiring less than the average number of pounds of feed for the production of a pound of gain. In former years many of the sheep raised in South Dakota were shipped to eastern feed lots and fitted for market on rape pasture and a small allowance of grain. After careful inquiry it is learned that these feeders figure on a profit of not less than one dollar per head. This profit is obtained by the increase in value of the original weight and gain put on during the short feeding period while on rape pasture.

The sheep has no equal as a weed destroyer, eating nearly all the numerous weeds and grasses found on every farm. From all reports, the sheep industry is increasing in the state, although the days of raising sheep in large flocks for the feeding market are slowly passing away. In the older settled sections many flocks have been established recently, which will more than offset the loss of the large number formerly raised on the range. By this better care the lambs will be better fitted for the butcher and will command a higher price in the market than formerly.

Although sheep raising is one of the most profitable industries on the farm, in some of the most densely populated sections of this state, where the farms are highly improved, where large yields of grain are obtained annuallly, and where during the past few years the price of land has trebled, the fattening of sheep for market is practically unknown.

This Bulletin presents the results obtained in two feeding experiments with lambs. The first experiment was to determine the relative value of alfalfa hay and upland prairie hay with the same kind of grain ration; the second was to determine the value of different grain rations for lambs while on rape pasture.

The question of producing the cheapest pound of gain should be kept in mind when fattening lambs for market, and these results are intended to furnish the fitter an idea of the value of cheap fodder and pasture in mutton production.

EXPERIMENT NO. 2.

FATTENING LAMBS ON GRAINS AND RAPE PASTURE.

Rape has been used as a forage plant in the Northwest for several years, and many claims have been made as to its value for fattening lambs. The practice in some sections is to sow rape with the small grain in the spring and also in the corn field at the last plowing. After the grain is cut the rape makes a rapid growth and furnishes an abundance of succulent feed until severe frosts. After an unsuccessful attempt in 1907 to secure an average stand of rape by sowing with grain, a field containing about six acres was sowed the following years without a nurse crop at the rate of four to six pounds to the acre. The variety used was the Dwarf Essex. Rape needs a well prepared seed-bed and a soil rich in humus or decayed vegetable matter. The soil should be well drained. Good results have been obtained by sowing rape in lots on college farm that had been rooted up by hogs. In a feeding experiment with hogs at this Station, rape pasture was fond to be worth $7.04 per acre (Bulletin No. 90), this being the value of the gain of lot that received rape over lot that did not receive rape pasture. Farmers' Bulletin No. 49, United States Department of Agriculture, reports the following on rape:

"This crop is one that has many advantages for summer feeding breeding ewes. It grows rapidly, producing a large quantity, of succulent food, and is greatly relished by sheep. About two months is required for the growth of a crop. It remains fresh in the field for over a month under usual conditions after the first cutting has been made. At the Wisconsin Station 62 ewes, 26 ewe lambs, and 5 rams were fed from 300 to 350 pounds of rape daily throughout the drought of August and September. From August 16th until September 17th 9.75 tons by actual weight were cut from 0.5 acre, or at the rate of 19.5 tons per acre.

"In cutting rape at different heights, the best results were obtained from cutting about four inches from the ground. Two cuttings were made from the piece so treated, one August 29th and the other November 6th, and the yield was at the rate of 36 tons per acre.

"There are exceptional possibilities in well-grown rape for fattening lambs, if it is fed with proper judgment and care. It may be fed to best advantage in the early fall, and hence is of valuable assistance in fattening lambs for the fall or early winter market. It supplies a vast amount of food of which the lambs are very fond, and, as it withstands drought and early frost better than most succulent fodders, it is a crop that may be relied upon with at least common certainty. The first trials reported with rape for fattening lambs were made in England about 1845. Ten wethers fed on rape alone from August 10th to September 21st made an average increase in the six weeks of twenty pounds, or two pounds per head weekly.

"The most extensive trials in feeding lambs on rape have been carried on at the Ontario Experimental Farm. In 1890, 54 acres of rape pastured 17 head of steers and 537 sheep, and one acre of the rape sustained 12 lambs for two months. It is estimated that the food provided by an acre of rape was worth $16.80. In another trial rape alone was fed to 60 lambs, and they were kept on 2.18 acres for twenty-five days, during which time they increased in weight 390 pounds, or an average weekly increase per head of 1.82 pounds. Again, in an experiment on one-sixth of an acre, 6 lambs were kept for forty-two days, and from this it is concluded that one acre would have pastured 36 lambs two months and have made 762 pounds of mutton.

"At the Michigan Station 15 acres of rape pastured 128 lambs for seven and a half weeks, with a total gain of 2,890 pounds. At this rate it is estimated that one acre would pasture 9 lambs seven weeks, and they would produce 202.5 pounds of increase. It is stated that the field would unquestionably have pastured 10 lambs for the period of ten weeks."

Rape has a comparatively narrow nutritive ratio, since it contains a large per cent of digestible protein to the per cent of digestible carbohydrates, in this respect resembling clover and alfalfa. Each animal requires certain quantities of these elements in his daily ration for the best gains, and whether the elements are bought in the market in the form of by-products such as linseed meal, cotton seed meal, or any other highly proteinaceous substance, or whether it is grown on the farm, the sult in feeding is the same.

The following experiment was conducted at the South Dakota Experiment Station during September and October, 1908 and 1909: Each year forty-eight (48) head of lambs were purchased, divided into four different lots of twelve (12) head each, and weighed up for the test. Each lot was provided with a small house for shelter in case of storm. Lot 1 received rape pasture alone, Lot 2 received rape pasture and shelled corn, Lot 3 received rape pasture and oats, and Lot 4 received rape pasture and barley. With the exception of Lot 1, each lot was given what grain it would eat up clean. The first test extended over a period of forty-four days, and the second test covered a period of thirty-one days. On account of the dry weather and early killing frosts in 1909, which stopped the growth of rape, it was impossible to cover the same number of days as in 1908.

For this reason the results of our second year's work are not so good as they are for the first year.

TABLE OF WEIGHTS AND GAINS.

LOT I—RAPE PASTURE.

1908 Experiment.				1909 Experiment			
Weight at beginning, September 3	Weight at end, October 17	Gain	Gain per head daily	Weight at beginning, August 31	Weight at end, October 1	Gain	Gain per head daily
75	93	18	.40	76	95	29	.93
55	72	17	.39	67	79	12	.39
73	91	18	.40	63	72	9	.29
64	72	8	.18	67	79	12	.39
73	92	19	.43	52	58	6	.19
62	81	19	.43	72	81	9	.29
75	89	14	.31	61	72	11	.35
74	94	20	.45	78	83	5	.16
63	80	17	.39	71	81	10	.32
66	85	19	.43	69	80	11	.35
71	82	11	.25	62	75	13	.42
60	77	17	.39				
811	1008	197	.37	738	855	117	.34

LOT II—RAPE AND CORN.

73	94	21	.48	70	81	11	.35
59	78	19	.43	50	63	13	.42
80	97	17	.39	69	81	12	.39
78	94	16	.36	57	59	2	.06
67	75	8	.18	66	79	13	.42
75	93	18	.40	64	77	13	.42
61	76	15	.34	69	83	14	.45
78	92	14	.32	77	83	6	.19
78	96	18	.40	72	86	14	.45
73	91	18	.40	73	83	10	.32
72	86	14	.31	70	76	6	.19
				51	56	5	.16
794	972	178	.37	788	907	119	.32

Lot II, consisting of twenty-three lambs, and receiving what corn they would eat both morning and evening while on rape pasture, did not gain as many pounds as the twenty-three head receiving rape pasture without grain.

The individual gains for Lot II either year are not so uniform as for Lot I, showing that while the lambs consumed the corn, it interfered with the fattening process. The average gain of the twenty-three head of lambs on rape pasture without grain for the two years was 13.65 pounds, while the average gain for lots receiving rape and corn for two years was 12.91 pounds per head.*

TABLE OF WEIGHTS AND GAINS.

LOT III—RAPE AND OATS.

1908 Experiment.				1909 Experiment.			
Weight at beginning, September 3	Weight at end, October 17	Gain	Gain per head daily	Weight at beginning, August 31	Weight at end, October 1	Gain	Gain per head daily
69	91	22	.50	60	77	17	.55
79	98	19	.43	56	75	19	.61
82	94	12	.27	82	95	13	.42
78	93	15	.34	78	89	11	.35
74	95	21	.48	69	85	16	.52
74	93	19	.43	65	74	9	.29
71	93	22	.50	65	75	10	.32
71	91	20	.45	66	78	12	.39
76	96	20	.45	66	74	8	.26
71	84	13	.29	66	74	8	.26
63	87	24	.54	63	70	7	.22
75	95	20	.45	51	64	13	.42
883	1110	227	.43	787	930	143	.38

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*At the Wisconsin Station sixteen wethers were fed on 0.7 of an acre of rape for twenty-five days, and also ate 153.5 pounds of oats and 97.5 pounds of whole corn. They gained a total of 149 pounds, or a weekly average of 2.6 pounds. Valuing the foods and the wethers at cost, and the selling price of the latter at 4 cents per pound, the rape would be worth $14.48 per acre.

TABLE OF WEIGHTS AND GAINS—CONTINUED

LOT IV RAPE AND BARLEY.

1908 Experiment				1909 Experiment			
Weight at beginning, September 3	Weight at end, October 17	Gain	Gain per head daily	Weight at beginning, August 31	Weight at end, October 1	Gain	Gain per head daily
68	80	12	.27	61	71	10	.32
72	91	19	.43	56	68	12	.39
62	84	22	.50	71	81	10	.32
73	94	21	.48	66	73	7	.22
65	83	17	.39	75	85	10	.32
67	85	18	.40	72	84	12	.39
69	94	25	.57	78	94	16	.52
56	71	15	.34	75	91	16	.52
72	91	19	.43	55	69	14	.45
71	85	14	.32	56	70	14	.45
62	86	24	.54	73	85	12	.39
70	92	22	.50	50	58	8	.26
807	1036	229	.43	788	928	140	.37

The twenty-four lambs receiving what oats they would eat morning and evening made the largest gain of the four lots, being fifteen and forty-one hundredths (15.41) pounds each, as compared to fifteen and thirty-seven hundredths (15.37) pounds for Lot IV, receiving barley. The Lambs in both Lots II Iand IV for both years made larger and more uniform gains than did the lambs in Lots I and II, showing that oats and barley are better suited for rapid gains for lambs than corn or no grain when on rape pasture. The difference in gain in favor of the oat lot is so small that the value of these two grains may be considered about equal pound for pound for fattening lambs on rape. The average gain for the twenty-four lambs fed rape and oats both years was fifteen and forty-one hundredths (15.41) pounds, while the average gain for twenty-four lambs fed rape and barley was fifteen and thirty-seven hundredths (15.37) pounds per head.*

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*At the Ontario Experiment Station, fifteen wethers were fed on an acre of rape, with 0.5 pound of oats in addition. Besides eating almost the whole of the crop from an acre in fifty-eight days, they also consumed 345 pounds of oats, and gained 23.67 pounds per head, or a weekly increase of 2.8 pounds per head.

TABLE NO. II.

Kinds of Feed	1908 Experiment					1909 Experiment				
	No. of lambs	No. days fed	Grain consumed	Gain	Average gain per head daily	No. of lambs	No. days fed	Grain consumed	Gain	Average gain per head daily
Lot I, rape	12	44	----	197	.37	11	31	----	117	.34
Lot II, rape pasture and shelled corn	11	44	210	178	.34	12	31	275	119	.32
Lot III, rape pasture and oats	12	44	303	227	.43	12	31	282	143	.38
Lot IV, rape pasture and barley	12	44	313	229	.43	12	31	282	140	.37

Table No. II shows kind of feed, number of lambs, number of days fed, quantity of grain consumed, total gain and average gain per head daily for each lot and for both years.

The grain ration was the same for both years. For the quantity of grain consumed, the lots receiving oats made the best gains each year, although the two lots receiving barley made practically the same gain for grain consumed. Barley as a rule is much higher in price than oats at this time of the year, hence for economical and quick gains with lambs on rape pasture, oats are to be preferred.

By feeding shelled corn there was a loss each year, as the gains were not so large as they were for the lots receiving the rape pasture alone.

Our results of pasturing sheep and lambs on rape on the college farm and experiment station have been very satisfactory. An experiment was conducted to determine what conditions must be present to cause bloat when first turning in on rape as follows: Lot No. 1 was put in on the clear rape without any other forage plant accessible and kept there day and night; Lot No. 2 was turned on a field where they had access to grass in addition to rape pasture; Lot No. 3 was turned on the rape when the dew was on early in the morning; Lot No. 4 was turned on rape when it was dry. The lambs were raised on the range and were not accustomed to this forage. The result was the same for each lot, all coming through in a healthy condition.

Of the 96 head of lambs weighed up for this experiment, two head are not reported. One died a few days after weighing, and the other was affected with worms.

We believe, however, that care should be taken when turning in on any kind of new forage, as there is danger of the animal gorging himself.

THE FARM AND THE FLOCK.

(Reprint from "Breeding Shropshires" Chandler. With consent of F. M. and H. A. Chandler, Chariton, Iowa.)

Farmers are working under different conditions than did their forefathers—in many instances the soil has been tilled until it is weakened. The agricultural population realizes more fully than ever before the necessity of restoring strength to worn-out farms, also of keeping up even those that are the most productive. Farmers do not desire to repeat the past folly of continually raising grain and not returning anything to the soil, but are anxious to learn the best solution of this problem. Land is getting higher and higher in price, and not only are owners of deteriorated farms striving to bring theirs up to an average, but those who have the most valuable and richest farms want some means of maintaining this high standard and deriving the necessary profit from a large investment. Therefore the main purpose of the farmer is to increase the productive power of the soil and to raise upon that land what will make the largest net returns. As no soil can be continually farmed for grain, it must be changed to clovers and other grasses, and then comes the question: "What is it that will give the best results in increasing soil fertility and also the largest profits from grasses, both green and in the form of hay?" The fact that many are learning the correct answer to this question is one reason why the sheep business is increasing generally. Their droppings are the richest of known natural fertilizers and are well scattered over the pastures. In addition to this, the flock is the greatest of weed destroyers, and killing such large quantities of numerous weeds preserves in the soil that plant food which the weeds would have consumed. So the flock adds strength to the soil in two ways, and the good results from their eating nearly every known weed is invariably underestimated. No other domestic animal will so completely clear the farm, and at the same time sheep use weeds as food. Apart from preserving soil fertility, the total riddance of weeds adds much to the appearance of land. Farmers, as a whole, have partially learned the value of a flock in this respect, and those who are working to preserve their farms are not scoffed at as they were a few years ago. As more attention is given to the soil, the number of flocks will increase. If sheep consumed as much grain and hay accordingly as other stock, sold for the same market price, and had no wool, flocks would anyway eventually become more numerous on our farms in order to obtain the results just mentioned. But our population must be clothed, and their average wealth is such that good clothes will be purchased—that means large demand for wool, and it is in evidence according to the high price of wool. The strong continual demand will always keep it there, too, just the same as wheat, corn, etc., which the millions of people must have. The wool clip will invariably fully pay for the yearly upkeep of the flock, and no other domestic animal has a "side product" that will pay its yearly board bill. The lamb crop comes in as clear profit and is a large return in comparison with the investment. More mutton is being consumed per capita and the great increase in population has made a noticeable advancement in the demand for mutton. The price of lambs on the leading markets during recent years has averaged higher than cattle or hogs. Even if prices had been equal, lambs would have been the most profitable, owing to low cost of production. It has been demonstrated that from a given amount of feed lambs will make the largest gain, and they are also much easier cared for than other stock.

Many farmers have been born where cattle, hogs and corn were of farming, but it cannot always be continued. Experienced men say that about all they saw, and truly good returns have come from that sort the profits are not nearly so great now as in the past, and if it were continued without variation the farms would not be as valuable as they might have been. The necessity of a change is realized, and nothing else fills the place like a flock of sheep. Evidence of this comes from the large number of flocks which have been founded during recent years only good for rough, brushy land which could not be plowed. They did on just such farms. Years ago the prevalent idea was that sheep were give the largest obtainable returns from such land, but now farmers also know that sheep in their place give the largest returns from high priced land. Those who realize that no land can raise corn for an indefinite period are in a majority of cases putting in a flock of sheep. The principal cause of less flocks seems to have been because most farmers did not grow up where sheep were kept, so that they have never given any attention to the true value of a flock. As deeper study is given to sheep, the fewer will be the number of farms without them. English farmers have long ago learned that in order to derive the greatest possible profit from a farm, a flock of sheep must be kept upon it. As American land approaches the value of theirs, the absolute necessity of soil fertility comes into prominence, and farmers figure for the last dollar that their farms will produce, either directly or indirectly, then sheep will come into their place and there will be the right relation between the farm and the flock.

THE COST OF PRODUCING MUTTON.

As farming cannot be successfully continued without occasional change to grasses for the maintenance of live stock, thus fertilizing the soil in different ways, and owing to the fact that sheep make the best use of all odds and ends about the pastures, meadows, rye patches, corn with rape underneath, etc., and are the best of live stock to fertilize by their droppings, no farm, however rich in natural fertility or high in price, will give largest net returns without a flock of sheep. Therefore the question is: "What breed of sheep gives the largest profits continually?" Shropshires are the most economical producers of mutton, giving higher returns in carcass weight for food consumed than any other of the acknowledged mutton breeds. Each pound of mutton they produce is worth more money than the coarse-grained sort from the extremely large mutton breeds. Each year the range in market price is getting wider and wider between the compact, firmly and evenly-fleshed Shropshire lambs, which give quality carcasses of handy weights, and the larger rough breeds, which give less dressed percentage of mutton which is also of much lower quality. From a current issue of probably the most reliable publication regarding Chicago live stock markets we quote the following:

"It must not be presumed that all lambs are realizing lofty prices. Only high dressers are equal to the performance and dressed meat percentages are closely watched. A band of shorn lambs costing $8 on the hoof actually made dearer mutton on the hooks by $1 per hundredweight than another purchase costing $8.50 alive."

Buyers for the large killers and packers are nowadays close observers of how every purchase dresses out in quality and weight on the hooks. In future years even a closer discrimination will be made against lambs which do not "kill well." Returns are being kept close tab on in order that lambs and sheep will be purchased according to their real value—no guesswork about it. Notice in the market reports from time to time that medium weight quality lambs bring nearly double the price that coarse fellows with poor quality do. When you go to the butcher's shop do you want a chunk of coarse-grained, fatty mutton? If so, you are one in a thousand, because the other nine hundred and ninety-nine will want a rich, lean piece, fine as possible in quality. People nowadays know the difference in taste between the two, and place all preference for that which is fine in grain. Lowest actual cost of production per pound of mutton and the very highest price when sold is certainly making the former indifferent sheep raisers "turn the tables" and keep the breed which is really the most profitable when everything is taken into consideration. Sheep raisers are also particularly noticing how much lower the annual cost of maintaining a flock of Shropshire breeding ewes is than those of any other breed. Not only is it important to have the class of lambs which make good gains and command highest price, but it is most desirable to materially lower the cost of first producing those lambs. Ewes of other breeds require a larger amount of green food and some grain in addition, while Shropshire ewes will be nursing fat lambs and in perfect condition on a rougher, poorer pasture and without grain. Many times at the same season of the year have the writers visited breeding flocks of the Shropshire and various other breeds in different sections of both America and England and noticed the conditions exactly as stated above. Shropshires are easiest to keep in thrifty condition and ofttimes at practically half the cost of the upkeep of flocks of other breeds. Shropshires are naturally good feeders and exceptionally strong in constitution, having the inherent robustness of their origin from the hill breeds of the English county from whence the Shropshire breed takes its name. Strength of constitution is a prime requisite in all breeding or feeding sheep. In the life of animals things come up as various sorts of trouble and hardship which must be withstood by the animal system, the weak constituted ones suffering to a greater or less extent under these conditions, but those with strong constitutions ward off the trouble and are hale and hearty. The strong-constituted sheep possesses the highest degree of digestive and assimilative power, and even under unfavorable conditions makes most thorough use of all its food. Shropshire fleeces have the greatest density and length combined, thus giving heavy weights and complete protection, altogether making what might well be termed the unequalled general-purpose sheep for the farmer and breeder. The Shropshire fleece is a perfect covering all over and under the body and is bred that way not only for increased weight of wool, but for absolute protection from damp, cold weather and storms. The general farmer needs such a breed which will not be soaked to the skin when there is rain or blowing snow. The dense Shropshire fleece, together with their strong constitution, insures health and vigor under all conditions and in varying climates. These characteristics, by keeping up the highest degree of thrift, aid the sheep in making largest gains, thereby lowering the cost of Shropshire mutton production. On the average farm, wherever located, the Shropshire will give best possible results in the economical production of highest class mutton.

SELECTING FLOCK HEADERS FOR GRADE FLOCKS.

Careful methods of breeding have placed the Shropshire breed of sheep in its present possession of desirable qualities. The greatest profits come to the best breeders. The common class of lambs does not attract the same number of purchasers as the better lot, even though the price asked for the former is much lower. This superiority can be attained only by proper methods of breeding. Although the ewe portion of the flock plays a very important part in breeding, the greatest, cheapest and quickest results can be obtained by using the highest class of registered rams. The ram makes a mark on every lamb, while the ewe affects but one or two, as the case may be.

Before commencing your look for a flock-header, get it thoroughly into your mind just the sort that will do your flock the most good, and after that do not stop until you get him. If you have a grade flock and are producing lambs for market purposes, remember that the strong-constituted, thick-fleshed fellows top the market, and your bunch of lambs must be uniform in size, type, and density of wool to present the desired appearance in the sale pen. Constitution is a prime requisite in sheep, whether they are for the breeding pen, feed lot, or showyard. The extended nostril, strong short neck, wide deep chest, and well-sprung rib all indicate that the heart, lungs and digestive organs have plenty of room in which to do their proper and required work.

Get a strong constituted ram, correct in mutton conformation, with a dense clear fleece, and all the size possible. The bigger the sheep the better so long as he has good quality of flesh. There is a "happy medium" which combines much size with quality—that is the right sort. It doesn't pay to raise coarse poor feeders or those that fatten in patches, because the market doesn't want that sort, but it never pays to raise little bits of things either. Breed for all the size you can possibly combine with quality. The butcher wants the lamb which will dress out the largest percentage of natural flesh in the most valuable cuts, the back and hind-quarters, and you need not think that a bunch of bare-backed, narrow-hind-ended lambs would go through any leading market at the same price that the straight-backed wide thickly fleshed sort would.

When purchasing rams remember that in addition to being the hardiest, finest qualitied mutton breed for the farmer Shropshire are the heaviest shearers of the Down mutton breeds. The dense Shropshire fleece adds to the general thrift of the flock by affording natural complete protection from bad weather and also greatly increase the annual income. From old Shropshire flocks which have been bred for heavy fleeces, rams can be obtained which shear 15 lbs. and upwards of clear white dense wool. To make the largest returns from the flock investments no ram should be used which shears less than 15 lbs. per clip. A large income can be obtained from the wool by careful breeding and not sacrifice anything in mutton conformation.

Decided masculinity is required in the ram, this being indicated by general burliness of the head, thickness of the neck, and general massiveness with a bold assertive appearance. A ram with a narrow nose and head, a long slim neck, and lacking in vigor, rarely if ever, was known to be an impressive sire. If you are accustomed to purchasing a ram of the medium class, the additional $5 required for the purchase of a superior one may seem to be quite a large sum, but a small investment in this way nearly always results in a much larger future income from the flock. Those who have used good rams never turn back to using the more common class, and if you get a better ram this year than ever before, your flock will commence to make larger and better returns and make breeding more interesting.

Best value in sires is obtained by purchasing from the oldest reputable flock. By introducing such individuality and breeding which has taken the ram breeder a life-time to produce, you are at a comparatively small cost raising your flock to a high standard. Carefully bred rams from a good old flock are, by reason of the superiority of ancestors, reliable sires which will most strongly impress their good qualities upon the offspring. One of the most profitable results coming from the use of such rams on grade flocks is that the lamb crop is so uniform in type, markings, conformation of body, and density of fleece. Big rams from a flock which has long been bred for size will sire a most uniform lot of large individual lambs. There is great difference between the breeding results from a ram obtained from a really superior flock and another obtained from a more common registered flock. The broad-minded successful breeder is also a better man to do business with and experience has taught him how to meet customers on a fair basis. It is great satisfaction to have relation with breeders whom you know can be depended upon. Their sheep are the highest class, pedigrees correct, prices in accordance with actual value, and all dealings are handled in a business-like manner.

LITTLE FACTS FOR BOTH BEGINNERS AND BREEDERS.

Energy is what wins.

Size with quality is the best policy.

Aim high for a definite object.

Success does not come; you have to go after it.

Superiority in both type and individuality of your flock is the best trademark.

A clean record is the greatest kind of success.

The period of gestation in sheep ranges usually from 21 weeks and 5 days to 22 weeks.

Most of the things that breeders attribute to misfortune are due to ignorance.

It is a disgrace not to do one's level best to succeed.

Any breed is worth caring for well, but some give larger returns than others.

First-class sheep do not come from any but first-class firms.

Intense earnestness, perseverance, and familiarity with the minutest details of the sheep industry are the chief elements of success.

Placing grain in "self-feeders" is far from being the most economical method of feeding.

To please just one customer will give you an opportunity to please his friends and acquaintances.

Wisdom consists of doing the things it would be foolish not to do. Every farmer is wise in raising sheep, and good ones, too.

Plan your work, then work your plan. The breeder who doesn't will never reach a high standing.

Foundation breeding material from old, reputable flocks can be relied upon to give uniform results of the highest class.

Salt should be kept before the flock, and although it does not affect digestion, it tends to increase consumption of food and improve nutrition.

There is always a demand for scarce articles, therefore to obtain the highest prices you must produce sheep with such quality that they will be hard to equal.

It is not necessary that a man know all things, but in order to succeed he must know who knows that which he does not know, and go to him for it.

Anyone will work hard when all is coming his way, but the sheep breeder who climbs to the top of the ladder of success is he who makes stepping stones of what are stumbling blocks for others.

A breeder's reputation is based upon the class of sheep he produces—the enviable one being created by the superiority in sheep sent out.

And if you fall—why, rise again! Get up and go on; you may be sorely bruised with your fall, but is that any reason for lying still, and giving up the struggle cowardly?

Sheep are creatures of habit and should always be handled by the same regular and quiet attendant. Dogs and strangers should be kept from the feeding pens at all times if possible.

In the pure-bred business, a breeder's friends might nearly be termed an asset. Friends are our mirrors and should be clearer than crystal.

It is highly profitable to correct a mistake. If you resolve to do so, the care you exercise in avoiding them will give you a less number to correct.

Large oaks from little acorns grow, and the big breeders have been little some day. This is satisfaction to the beginner, because what has been done can be done again.

The business which is conducted on the basis of a hope for permanency must give value received or it will die.

Old sayings are the best or they would long ago have been forgotten, so there must be great truth in that familiar one, "Blood will tell." The scrub ram gives undesirable results which are a detriment to any flock and lower the profits derived therefrom.

"Opportunity knocks once at every man's door." When it comes to you in the pure-bred sheep business, be sure you are awake to answer the bell, because if you don't someone else will, and then gain the trade of your vicinity. Successful breeders are "live-wires" all the time.

Make your methods of breeding an object lesson for improvement to all who may visit your flock.

Success as a breeder is gained by many years of careful selection and breeding for size, type, character, mutton conformation, and dense fleeces. When purchases of breeding ewes or rams are made they are selected from the most reputable flock within reach because individuals from only such a flock will give the desired unvarying results. The "old war horses" are those who have looked to the future and built for it. Do not expect success in one or two years.

Standards which determine economy in the purchase of breeding sheep do not lie in dollars alone. Over against them must be considered the really important measure, and that is value. An expenditure, no matter how small, is extravagance if it brings no returns. If you purchase rams or ewes simply because they are low-priced, and they give very little or no returns, it is extravagance. It is no matter how high-priced a sheep is, just so he is good value.

GREEN FEEDS FOR SUMMER.

RAPE.

Rape is the most universal green plant grown for summer use with lambs and exhibition sheep. Perhaps this is due to the fact that it is easily raised and grows an abundance of feed on a small area, as much as fifteen tons having been obtained from a single cutting per acre. Dwarf Essex is the best variety and grows up very quickly, being large enough to cut for use within seventy to ninety days after planting. The seed is about the same in size as that of the turnip, and when sown broadcast it will require from four to six pounds per acre. It can be sown in the spring as soon as warm weather comes, and when sown in drills it will not require over three or four pounds per acre, yet it need not be spared, because it only costs from five to eight cents per pound. Well

''CLOVER HILL'S'' 4047 A. S. A. 261015

First Prize two-year-old Shropshire ewe in Iowa and American-bred classes, Iowa State Fair 1909, bred and owned by exhibitors, **Chandler Bros.**, ''Clover Hill Farm,'' Chariton, Iowa. Also one of the Champion Iowa-bred Shropshire Flock, 1909 prepared, clean ground raises the heaviest and best crop. If not cut too short the first time there will be a luxuriant second growth, which comes into good use for the field lambs in the autumn. The housed sheep do wonderfully well with rape as their green feed.

KALE.

Thousand-headed kale is another very desirable green crop, and in apearance is about between rape and cabbage. Of course, the leaves of rape are wide out, while those of cabbage form a head, but kale would not come under either description. Possily it is harder to raise than rape, but it contains more dry matter. The best crop of kale comes from having drilled it in rows about eighteen inches apart. Then when it has come well up it can be thinned in the rows according to the growth of plant that is desired. They should be left fairly close together or they will become so large that the stems will be woody. If it is your first year with these plants, only a small patch of kale should be put out, and then it can be seen how kale and rape compare.

CABBAGE.

As neither kale nor rape will keep in good condition very long after cutting, the exhibitor must raise some crop that will afford the necessary green stuff while away at the shows. Cabbage fills this place very well. Seed of the early varieties can be sown in a "bed" at the house and the plants transplanted as soon as spring opens up. This method is necessary in order that you may be sure of some fair-sized heads when you first need them. For the later cabbage some flock-masters prefer to drill the seed in the field, but we have never had very good success in that way, so have adopted the same manner of transplanting that we have with the early varities. If you get a good cabbage crop you have assurance of keeping your flock in form throughout the fair circuit.

TURNIPS.

The flock while away do all the better if they have some additional feed other than cabbage and their grain, and as it should be of a succulent nature, the turnip comes into place. In the early spring a small patch of turnips should be planted, and although some prefer the Purple Top, we have always obtained the best results with the White Globe. It doesn't matter so much what variety it is, so they are put in early and on a clean patch of soil. They should be drilled in rows so they could be well cared for and their growth stimulated. Mangels and rutabagas cannot be successfully used in place of the turnip so early in the season. When bagging them for the fairs be sure to remove the tops, and when they are sliced for the sheep they should be perfectly clean, because some bad results have been recorded from the feeding of sandy and dirty turnips. With these in addition to cabbage the exhibition sheep will thrive exceptionally well while away from home.

BEFORE THE SHOW.

Having brought the sheep of the respective classes as near perfection as possible, as regards growth and condition, much will still depend upon the way in which they are placed before the judges. Every care should be taken in matching individuals for the flock prize. A prize is often thrown away by putting together animals of different sizes and types.

Again, it would be bad policy to send the best animals away from home the week or so preceding the most important fairs, where the breed comes out in great numbers, and the prizes are more valued. Such a step would be placing the sheep at a disadvantage, as they would undoubtedly lose much of their bloom.

AS TO SELECTION.

If the exhibitor feels convinced he cannot show to win, he should not select the biggest to represent him, but rather those which are the truest to character and type, and likely to attract the attention of breeders, with perhaps more remunerative results than the mere money value of a prize. Undoubtedly many men have injured their reputation by exhibiting animals not true to character when perhaps their flock in its entirety was a very good one.

THE TRUE SHOW-RING SPIRIT.

The exhibitor has much to consider other than simply bringing forward his sheep in the best possible manner. It must be kept in mind what an exhibition is really for, but at all shows we find two classes of men, one including those who consider exhibiting as a sort of war in which they must strive to beat their competitor, regardless of how low they have to stoop to do it, and the other class includes those who are imbibed with the true show-ring spirit and are there to help raise the standard and advance sheep interests in general. The actions of the former class have to be endured to a greater or less extent by those exhibitors who are truly gentlemen. They will mix up their flocks and say disagreeable things, but new exhibitors must cultivate their own minds so these sneaking tricks and unkind words from other hands and lips will not excite or vex them. If you happen to have such a competitor, just consider that you are unfortunate to that extent, and by cool judgment and clear thinking try to overcome the public effect of his evil ways. Some men, and old ones too, in different cases, seem to think that their reputation can be built up by untruthful low sayings about other people, but such is not the case, and when you hear anyone speaking ill of their competitor just firmly impress upon your mind that the person who uttered those words is not a first-class man whose principles are high and correct. The true exhibitor who is a benefit to the industry and is satisfactory to deal with is the one that strives hard to bring forth sheep of the highest possible standard, and by placing them before the public and in the showring he helps to raise the ideals of spectators and for himself has the satisfaction of knowing what improvement he has made in his own flock and learns how he can make still greater improvement. Do not let your mind dwell upon what the other fellow is doing, but always do your level best to make your flock and yourself better from year to year. To be what we are, and to become what we are capable of becoming, is the only end of life.

Too many exhibitors center their thoughts and plans upon winning over some certain competitor, but that is the very lowest class of show-ring spirit, and when continued it not only upsets those breeders, but it does harm .to sheep-raising in the section where they are. The exhibitor must say to himself, "I will do the best I possibly can and take care of my own business." The world is always ready to welcome such men, and they invariably gain the best standing and prove to be the foundation for all real improvement. Those who splutter out and say they will beat a certain man, no matter what it costs, are just some specie of human hyena, and of course if they have plenty of money they can remain in the business and keep right on doing harm and upsetting young men's ideas. We suppose the Creator placed a few of them among us so when we viewed things correctly we could fully appreciate what is right, just and uplifting. The unassuming, steady, push-forward young exhibitor can gain a foothold and an enviable standing anywhere. Truly the show-ring brings more or less excitement, and it is good that we are filled with the spirit to win, but it also is high time to bring into full play the good old Golden Rule, "Do unto others as you would have them do unto you," and give it front position at all times in your principles which guide your words and actions toward others. Your desire to win should be based upon your purpose to make your flock as near perfection as possible, and then when your sheep are placed at the top of the class you have great and pleasing satisfaction. Would it really satisfy to win as a result of some mean act, or to make a sale by saying degrading things about another firm? Would that which seemed gain at the moment be a lasting gain, and would it make your life's work better and more satisfactory to yourself? When you start with a high-class pure-bred flock you have begun the foundation for a life-work and your desire is to make a great success. If you were to start a stone foundation for a large building and wanted it when completed to be a standing monument for your purpose and work, would you some day in a hurry put in some mud or other material which would soon crumble or rot away? The fairs and your work there are only but a stone in your foundation of a life's work in breeding, and it certainly will be best in the end to have left no weak places. Judge things with consideration of the future, and if you do right at all times when it comes sharply to you to do one thing or the other it makes you stronger in the estimation of both yourself and the public. Endeavor to be that kind of a showman that the good men enjoy showing against, and live such a strong and straight show-yard life that even your competitors will admire and respect you and your principles. There is more to consider than just yourself and today. Young farmers and breeders who pass the show-yard and pens and notice the high quality of your sheep and your personal manner may be buyers in future years. At the start it must not be the only desire to win; in fact, that is what leads many astray. Decide that you will do business squarely and produce the best sheep you possibly can and exhibit them fairly. Sound business principles with a respect for others is the only solid foundation to be laid for the future. That does not mean that energy should be slackened, because success is the result of labor. Work as hard as you can, but do everything honestly. The exhibitor who has any other principle may for a while seem to be succeeding but as time goes on, the world will notice that so-called success turning to failure. A good many things will stand in fine appearance when all is well but when real tests come it is the sound, high-principled exhibitor that stands and the others that fall. Work hard against those that really do the industry harm by inflating jealousy, etc., but always assist the man whose aim is for the right goal. The best breeders must unite to advance general interests. Selfishness is not included in the true show-ring spirit, and even with strong men it is a gain for today and a loss for tomorrow. The true exhibitor goes to the show to build up his reputation and help advance his breed and the industry. When we have studied deep down into the foundation principles which when combined will bring about these results we will have learned what if applied will cause us to have the true show-ring spirit. It is important and desirable that agricultural exhibitions be held to help general breeders to have higher ideals and also to stimulate the exhibitors to steady improvement in their flocks. Therefore it is the personal duty of each exhibitor to do his full part in assisting to bring about these results. Will any other than straight principles make object lessons which if copied after will make real advancement? Truly the exhibitor has first in mind his own welfare and the spreading of his reputation, but a broad mind, a generous heart, straight dealing, and good sheep are all that will ever bring him lasting personal gain. Do well by others and they will do well by you. The true show-ring spirit is broad and really helps everyone in the sheep business and gives spectators and beginning breeders high ideals. Talking with some exhibitors is an inspiration and they fill your mind with great and good thoughts, while other men will in the end make you feel mean and selfish; the former have the true show-ring spirit and the others have not. Try to be of the former class.

MANAGEMENT OF THE BREEDING FLOCK.

The breeder's year really begins when the ewes are mated in the autumn, so we will first refer to the mating season. During recent years a great deal of attention has been given to flushing breeding ewes.

This is a practice which is now being taken up by nearly all leading breeders in America, and for many years has been practiced in Great Britain and other foreign countries. The term "flushing" is applied to having the ewes rapidly gaining in flesh at the time ram is turned with them for mating.

There is abundant evidence that "flushing" hastens forward the mating time. It has been fully demonstrated that "heat" in animals is brought about through the action of an internal secretion elaborated by the ovaries (or organs which give rise to the ova or female germ cells). It would appear, therefore, that the artificial feeding which would be given the ewes at this time exercises a stimulating influence on the secretory action of the ovaries, while at the same time causing the graafian follicles (or ovarian vesicles which contain the ova) to reach maturity more rapidly, and a larger number to discharge during the early "heat" periods of the mating season. Besides causing the ewes to take service of ram at an earlier date, this additional and fresh feeding tends to increase the number of lambs dropped. Perhaps the results to be obtained from "flushing" have never been fully explained to all, therefore we wish to give the details of some experiments made by Francis H. A. Marshall, lecturer on the "Physiology of Reproduction" in the University of Edinburgh, Scotland.

In 1905 there were three pens of ewes in the experiment. One pen was fed on only grass during the summer months previous to mating. During the three weeks they were with the ram they received a full supply of turnips, and during pregnancy received dried grains and turnips, and were fed on "lamb food" about three weeks previous to lambing. The rams were fed on bruised oats during the time they were with the ewes. From this pen of ewes 12½ per cent had triplets and one ewe had four lambs. In this instance the exact percentage of lambs was 191.5. None of the ewes were barren and none aborted. Unfortunately, however, not all of the lambs could be reared, so the number still living at about one month after lambing was reduced to 183 per cent.

The second lot of ewes were given Bombay cake (a mixed feedstuff), bruised barley, a small amount of linseed cake, as well as turnips during mating time. Previous to this they were fed only on grass. Some turnips were allowed during the period of pregnancy. The rams received the same feed as the ewes. Thirteen and one-half per cent of the ewes produced triplets. None aborted or were barren. The ewes were all 3 years old and produced 193.75 per centage of lambs.

In the case of the third lot of ewes, they were placed on a fresh better pasture just previous to mating time, and from this time on until the middle of April they had good pasture, a reasonable allowance of turnips and all the cut hay they would eat. The rams received no special treatment. Out of 184 ewes, 23 had triplets, 2 ewes were barren, and 1 aborted. Altogether this pen produced lamb percentage of 196.

Further Mr. Marshall states that it is obvious that lambing returns as a whole confirm the conclusion that extra feeding at mating time results in a larger crop of lambs at the subsequent lambing.

One correspondent stated that he put 60 ewes on rape and clover at mating time and that 90 per cent of these had either twins or triplets at the ensuing lambing, far exceeding the other sheep, which were treated differently.

There is distinct evidence, also, that the barrenness percentage is less with ewes which have been specially fed in the way indicated.

These facts should be of great interest to every sheep breeder, because it is quite an item to produce a large percentage of early lambs, and the outlay of additional feed is very small.

The result of this practice has, of course, been perfectly well known to numerous individual flockmasters, who have consistently "flushed" the ewes on their own farms for a period of many years. It is surprising, however, that although feeding experiments upon mutton and wool production have been described in various agricultural publications, no systematic investigation dealing with the effects of different methods has ever been recorded. The complete absence, so far as the writer is aware, of any definite records on this subject may perhaps explain the want of knowledge of the results of extra feeding among large numbers of sheep breeders who have never adopted this method of increasing the fertility in their stock. In England the subject seems to have received even less attention than in Scotland, and in our own experience the practice of "flushing" is often deprecated by those who have never tried it. So far as we have been able to ascertain, those who have adopted the practice of flushing their ewes are satisfied that the extra cost which such additional feeding involves is more than repaid by the larger crop of lambs which is produced.

All who have flushed their ewes have found it very profitable, and, although not all the feeds used in the Scotch experiments are procurable in America, it is unnecessary because other feeds will answer the same purpose. By referring to the third lot of experiment ewes it will be seen that it could be carried out very simply on any American farm. Nearly every farmer has a fresh patch of second growth clover, and clover can hardly be excelled. Rape is good in addition, and if it were in corn or alone joining clover, you have an ideal combination. To turn your breeding ewes on a patch of clover and rape would immediately affect the ewes in the manner mentioned in the first part of this article. The ewes would come in "heat" very soon, and mating under such conditions would bring about the desired result of a large number of lambs.

The best results ever obtained at "Clover Hill," in Iowa, were from ewes turned on such a patch of fresh clover. We erected a few temporary "V" shaped troughs and fed them a liberal allowance of chopped pumpkins sprinkled over with salt and oats. The rams received the same treatment and were allowed to run with the ewes. As soon as the ewes had all taken the ram and refused the second time, the ram was taken from the flock. There were two sets of triplets from this lot, and nearly all raised twins; not a single ewe being barren. Lambs were dropped very closely together as regards date, and this assists the breeder in having a uniform bunch of lambs, which is very desirable. This is one step toward the production of "more better sheep" which should not be overlooked by anyone. Every farmer can "flush" his ewes in this way and once you have practiced it you will always continue. Attending to such details is what brings success to some breeders while the inattentive are wondering but never succeed as they would like to.

LATER MANAGEMENT.

After the ewes have remained to the service of the ram they should be turned on a good old turf. Blue grass pastures fairly well grown are the best after the heavy frosts have come on. As winter approaches a little grain could be given and when snow has come of course hay feeding must begin. Clover hay is by far the best hay produced in the Middle West.

Alfalfa is fully as good but is not raised very much east of the Missouri river. Breeding ewes should be kept in good thriving condition but not necessarily fat. They must have plenty of exercise so give them as much range as possible. When winter has set in of course the flock must be protected but do not shut them up in some small dark ill-ventilated and poorly-bedded shed. A sheep shed should be large, the roof high, and in some climates it is best to have the south side open. Unless you live in the north where winters are severe the flock should be turned out every day so they may have exercise. Scatter a few little bunches of corn fodder or hay on the side hill out of the wind and such practice will do the flock no end of good. Keep the shed clean and well bedded with oat or wheat straw. Remember that the ewes have their own bodies to keep up as well as the unborn lambs and they must have bone and muscle producing food. Timothy hay and corn produce fat so they should not be used. Clover hay, and pea straw are good rough material, while oats, bran, oilmeal, etc., are the proper trough feeds. Oats and bran in equal parts with about one-fifth the amount of crushed oil-cake is a most desirable mixture but as lambing time draws near the amount of oilmeal could be slightly increased. Properly fed ewes go through the lambing period in good form and drop strong lambs. Just before lambing each ewe should be placed in a small pen by herself and allowed to remain there until the lambs are two or three days old.

MERITS OF SHEEP FORAGE AND FEEDS.

CLOVER HAY.

Clover contains the greatest amount of feeding value when cut just as the heads are in full bloom. When in good condition it furnishes a large amount of protein and ash essential to thrift in the breeding flock. It helps to fully develop lambs which are to be retained as breeders because it builds strong bone and a large framework; it gives proper nourishment to the ewes carrying unborn lambs and gives more favorable returns than any other form of roughage to breeding sheep of all classes. Clover which has been poorly cared for and weatherbeaten becomes very harsh and, in addition to losing much of its feeding value, it is liable to cause stomach trouble. Too much attention cannot be given to properly gathering it so all the little leaves will be in fine condition.

CORN FODDER.

To obtain the largest amount of nutriment in the crop, the seed should be planted very thickly so the ears will not attain full size. The best time to cut for fodder is when the kernels are just past the glazing stage. If cut earlier the plant and ear would contain more water and less feeding value. Much attention should be given at cutting time in order that the stalks be placed erect and in very large shocks. This diminishes the loss of leaves by the wind and the detriment done by rains. Then it will be a valuable winter roughage for the flock, although the dry matter in fodder does not give quite such exceptional results as when the plant has been cut for silage, those breeders who do not have silos must not overlook the importance of having some good fodder.

However, it should not be fed exclusively, but can be rated very highly when a small allowance is fed daily. The leaves are a coarse hay of high feeding value, and the ear, having been left in the husks, is eaten with greater relish than the hard grain which has fully matured and been placed in a bin. There is no much better forage for sheep, but care should be taken that they do not get too much grain. Fodder is best fed outside where it tends to give the flock their needed daily exercise.

TIMOTHY HAY.

Timothy hay with its stiff, woody stems, yields a very small amount of forage and should not occupy an important place on the sheep farm.

ALFALFA HAY.

In making alfalfa hay the greatest care should be exercised in saving the leaves and finer parts, so easily wasted. The possible loss from careless making is great, but when properly cured, alfalfa is very palatable to sheep. Perhaps it will give slightly better results to fattening sheep than clover. Where it can be successfully grown it finds great favor for this purpose, but in the corn belt the amount of special work required in its production is much greater than with clover. The tap root of alfalfa reaches many feet into the soil, thus indicating that the plant must have a subsoil through which roots may pass and water should not be near the surface. For breeding sheep the feeding value is not much different than clover.

MILLET HAY.

Millet hay is not considered a good rough feed for sheep. If it is to be used for hay it should be cut when just coming into bloom to avoid the formation of the hard seeds which are nearly indigestable by live stock. In too many instances it is cut late, and then when the hay is used entirely it is apt to be very injurious. The principal objections are that it causes increased action of the kidneys, also scour. More care is necessary in feeding millet than any other coarse fodder. If it is to be fed, it should be in limited quantities and not continuously. If you have it on hand and do not care to purchase clover or other hay for whole allowance it would be advisable to at least feed an amount of clover equal to that of the millet.

OAT AND PEA HAY.

The prominent characteristic of the field pea is its large content of protein or bone and muscle building material, this richness of protein rendering it particularly useful for breeding ewes and growing lambs. When grown with oats it is a feed that merits the consideration of all flockmasters. We have received good results from feeding oat-and-pea hay, the seed having been sown at the rate of about two bushels of oats and one bushel of peas per acre. Seeding can be done practically as early as oats alone. Just as the oats are turning yellow at ripening time the pea seed will also have passed the milky stage and it is the right time to cut it for hay. This combination forms a forage of high nutritive value much appreciated by sheep. Attention should be given the crop at this time because if the crop were to be cut too green the seeds will mold and lower the feeding value. Properly cured oat and pea hay is a most excellent feed during winter months for the breeding flock, and it makes them thrifty rather than fat. The yield per acre is quite heavy and the mixture affords the proper winter change from the regular feeds. This same mixture can be grown to feed exhibition sheep and cut when desired before ripe for feeding inside.

CORN SILAGE.

With American breeders the use of some kind of succulent feed nearly the whole year round has become quite general. It helps to keep up the appetite and general condition of our flocks. Although roots are not so successfully grown as in Europe, corn takes their place and furnishes a larger and cheaper supply of food material from a given area than any other crop. It will yield about twice as much dry matter as a crop of roots grown on the same land, and it has been found by feeding experiments that the dry matter in corn silage gives as good results as that in roots. All breeders who can should have a silo because silage is so much more palatable to sheep than dry fodder and they will consume a larger amount of dry matter in that form and it is more easily digested. The use of silage as a succulent food for sheep has given most favorable results and experiments in fattening sheep have shown that corn silage gives better results than rutabagas or Swede turnips. We believe that it is the most desirable succulent food produced in the corn belt for both breeding and fattening sheep. Most of the adverse reports on silage are due to the use of green immature plants and such silage apart from being sour is of very low feeding value as compared with that made from the crop which was well matured before being harvested for the silo.

Indian corn is best suited for the purpose because when cut it packs very closely in a solid mass and keeps well. Like roots silage makes a watery carcass which is soft to the touch and this is a desirable condition in all breeding sheep also fattening ones during the early stages of that process. For breeding sheep the less tense flesh, a natural result of silage feeding, is more conducive to vigorous young at birth and to their hearty maintenance afterward than dry feed continually throughout the winter. Feeding only dry forage tends to produce a dry firm flesh—a condition certainly not conducive to the highest degree of health in the flock. Too many flocks give this dry harsh appearance in winter and it proves a loss to the owner in both the lamb crop and the wool. Silage tends to keep up the same condition that is noticed when the sheep are out on green grass in the summer, and the cost of its making is not very great. It also takes the place of much grain which would otherwise be required.

INDIAN CORN.

Corn as a grain is much relished by sheep and is more palatable than others which turn to a sticky mass during mastication. It has no equal for fattening but owing to its low per cent of protein and ash, it is not well suited for developing young or breeding sheep which require food that will produce bone and muscle. As it is raised by nearly every American farmer it is a common feed, but we believe that a great number of failures to obtain the greatest results from breeding flocks are due to the liberal use of corn. Ewes thus fed will fatten instead of properly nourish their lambs and then the owner wonders why they are not as healthy and thrifty as they should be. Liberal feeding and proper feeding are often quite different because no properly fed breeding flock receive a liberal allowance of corn, unless it is in conjunction with oats, bran or some such feed.

OATS.

Oats are perhaps the most desirable of all grains for the breeding flock because they produce growth rather than fattening. Oats contain a much higher proportion of bone and muscle-producing nutriment than corn and in itself is quite a well balanced ration. Especially is this true when the oat kernel has a small hull. If the oat crop is of poor quality and the hulls are woody it is well to add some bran or oil cake to the ration. In some cases oats have given better results when ground but we do not believe this is necessary or profitable for sheep feeding.

WHEAT.

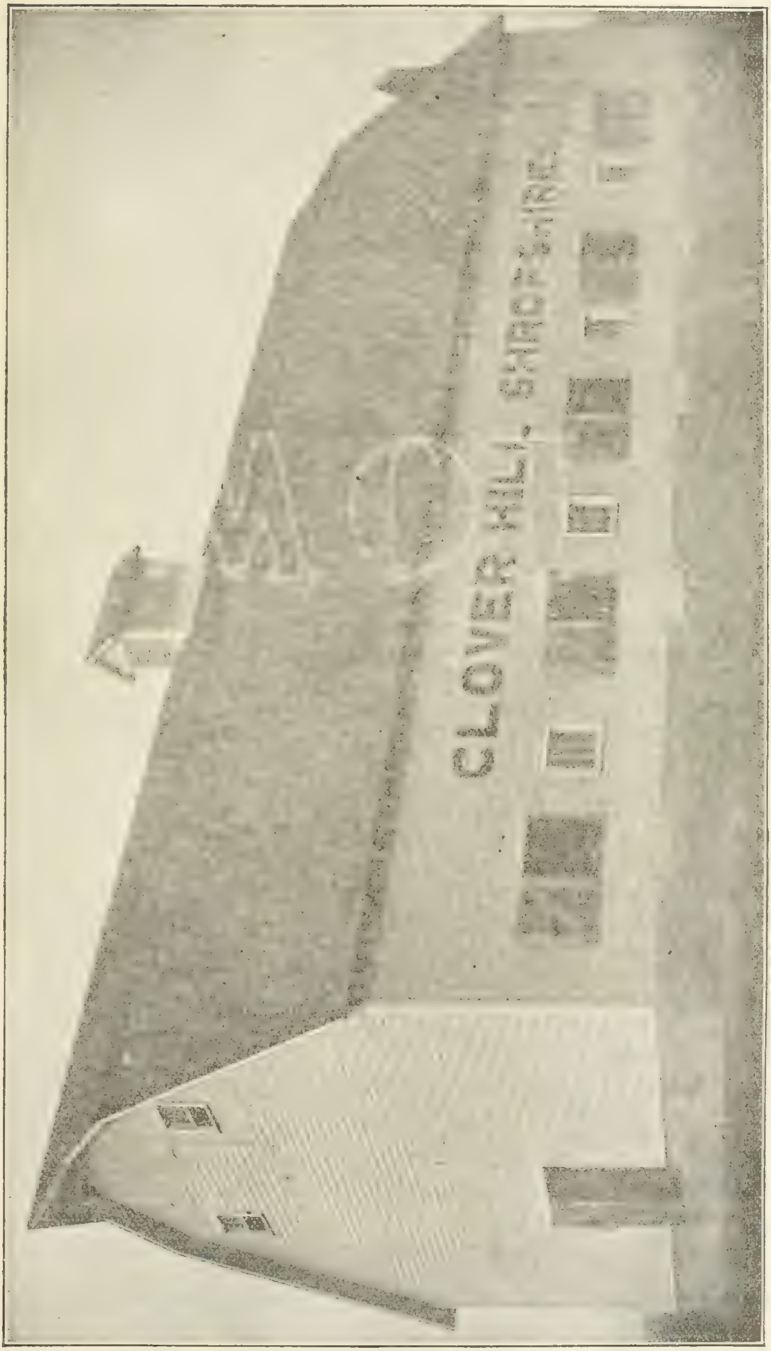
Wheat for sheep feed is much more balanced than corn, and contains a larger amount of that nutriment which is required for the full development of lambs and also contains nearly as large a per cent of fattening material. In most cases the price of wheat forbids its use for live stock feeding but those sheepmen in sections where wheat is plentiful are fortunate. It gives best results with sheep when fed whole but as it is a strong feed it should always be mixed with other grains. Some sheep breeders have obtained excellent results from feeding wheat alone but such use can not be recommended generally.

BRAN.

Wheat bran carries a large amount of crude fiber but it is very desirable for a mixture with grains. It produces the effect of a mild laxative which is quite beneficial. It contains a large amount of muscle and bone-building material and gives most excellent results when fed to growing lambs, breeding ewes and rams in service. For ewes with young lambs it is a leading feed with the best breeders because it not only furnishes bulk but large quantities of protein and ash which are so much needed in the formation of milk. Farmers who have plenty of corn but no oats or wheat can make a good ration by mixing bran with it. Sheep which are housed being fed for exhibition purposes should always have bran in their ration especially on account of its bulkiness and laxative effect upon the digestive organs. Breeding sheep should always receive some bran unless they are out on grass.

OIL MEAL.

Oil meal is the residue after ground flaxseed has been subjected to great pressure for the purpose of removing the oil. At first it is in slabs about


A C
CLOVER HILL, SHROPSHIRE

OUTSIDE VIEW OF A PRACTICAL SHEEP BARN AT "CLOVER HILL FARM" an inch thick, perhaps fourteen inches wide and about two feet long. For feeding, these slabs are reduced to the size of hazel nuts and this is called "nut cake" and is the most desirable size for sheep feeding. Usually it is ground to a meal but that forms a paste in the sheep's mouth which is undesirable. Oil cake or meal is a very healthful feed and places sheep in a fine general condition with a pink skin, oily fleece and good quality of flesh. It has a most beneficial effect upon the digestive organs and the flock always profits by having a small portion mixed with its regular winter grain allowance.

PRACTICAL SHEEP BARNS.

Proper shelter for the flocks adds greatly to their thrift, while improper sheds are in many instances not much better than nothing. To economically build barns which are correct at all times and for all purposes should be the desire of flockmasters. In the summer the pure-bred breeder wants a barn properly arranged for the well doing of sheep which he will be preparing for exhibition purposes, when cold disagreeable weather comes in the autumn all breeders want a place for the flocks to lie inside and have a little clover, during the winter ample shelter must be provided from heavy storms and a dry clean place is needed for feeding, in early spring a warm dry place is needed for the ewes and young lambs. Those are the needs for shelter. Then comes the matter of feeding and not only must proper feed troughs be provided but the rough feed should be close at hand. Arrangements should be made for some means of sorting the sheep without turning out of the barn. Some way of easily loading into and unloading from a wagon should be provided. There should be some space for mixing grain, to place buckets and all other loose necessaries about such a barn. The shepherd should have a room of his own, so he will be near the sheep at all times, and especially during the lambing period.

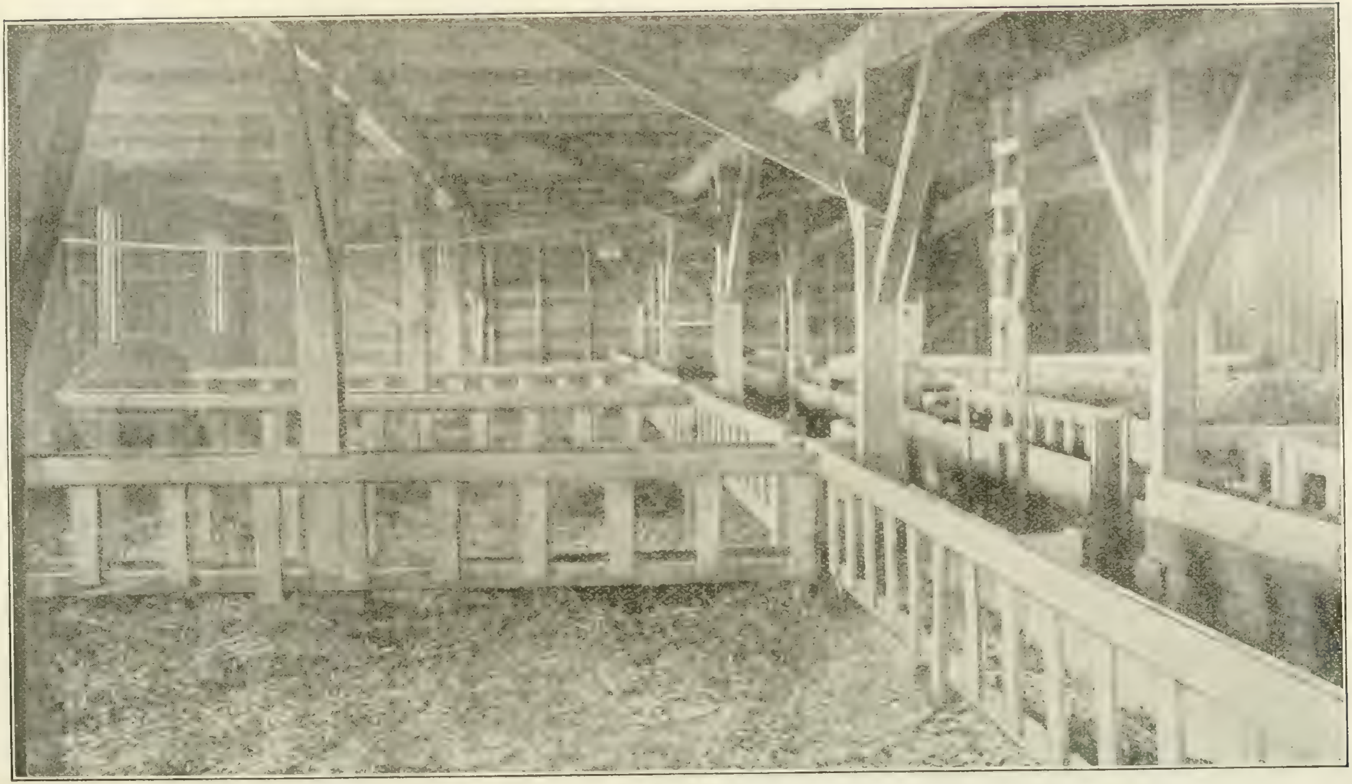
We have been many years in planning a barn to meet all such requirements, and we are now fully satisfied with those we have erected at "Clover Hill Farm." The one photo is of the outside of one of our barns, and the other photo gives an idea of the trough and pen arrangement inside. We do not believe in the low poorly-ventilated sheds found on so many sheep farms, and furthermore we want all hay and straw above the sheep where it is easily obtainable regardless of weather. Rough feed and straw, being kept from the weather in this way is also very bright and there is no loss such as is experienced by stacking outside. Such a barn lessens the shepherd's work and saves much general expense to the owner. Large doors next to the roof-peak open down to permit hay, etc., to be sent in by means of fork or sling on a steel track. Such entrance is at both ends, the carrier running from either end to center of hay mow. A large feed way, about 6x4 feet, extends from top of mow to shed below and this being arranged in center of barn lessens the winter work when feeding. The floor of the mow is 7-inch matched house flooring so no dust can possibly fall on the sheep below. This barn, 80 feet long and 36 feet wide, has hay room sufficiently large to hold all rough feed needed during a year for the 300 sheep which the shed below will hold. In the inside photo you will notice ladder in middle of barn going up this feedway down through which the hay etc., comes. The hay drops into the alley-way 4 feet wide which you will see runs full length of barn. In addition to being a place separate from the sheep through which all feed can be carried the alley-way is very convenient and clean for visitors to see all the sheep. Feed racks are made according to our own desires and ideas, being a combined one for both grain and hay. The bottom is a board ten inches wide, having a 3-inch piece nailed on each side. This bottom will then hold grain roots and the like. The upright pieces nailed to this are 1x4 inches and 18 inches long nailed to a 1x4 top piece running lengthwise. That makes a hay-rack 10 inches wide and 18 inches high which is sufficiently large to hold all hay the flock will eat during a night. From experience we have learned that it is poor policy to place large quantities of hay before sheep. Feed just what will be regularly eaten and then the rack can be cleaned for grain.

If for field ewes or rams and they are not fed grain, the troughs even then should be cleaned each time before putting in fresh hay.

All wood material used in these racks, and for all other inside work should be planed smooth so the fleece will not be continually roughed up. We have found these to be very desirable and serviceable racks and they have been copied by many "Clover Hill" visitors. We erect them stationary full length of barn on each side of alley-way (or walk-way), except where little doors open into each pen. This barn being 36 feet wide gives us a 16-foot space on each side of the 4-foot alley-way. We make these trough-racks of the right length to extend from the outside wall of barn to the trough next to alley-way but do not fasten them so securely but that they can be removed so pens can be made any desired size. Regularly we place them crosswise 16 feet apart and that makes pens practically 16 feet square. The upright pieces in troughs are 10 inches apart so a sheep can get its head in and out easily. We believe that is the correct space between uprights. As there is trough space on three sides of each pen it leaves space for about 40 sheep to eat in each pen 16 feet square which is as large a number as would be put there for shelter. There is a little gate on hinges from each pen to the alley-way and that makes easy what sorting or changing you might wish to do at any time.

In the outside photo at the end of barn you will notice the open door about three feet from the ground. It is at the alley-way end and when a wagon is backed up to it the wagon-box bottom is just level with barn floor thereby enabling us to drive sheep from any pen through the alley-way into the wagon without lifting. The barn foundation is of crushed rock and cement, 5 feet high, and the earth was not fully graded up to this end of barn. To each 16-foot pen there is a large door from the outside, also a window. This permits the driving of sheep in or out of any pen without disturbing the others and is also convenient when hauling the manure from each pen.

During the heat of summer a blind is placed over the windows to keep the sun's rays out and both top and bottom of doors are fastened open and a slat door is placed on the inside. The air must be let right down to the sheep, it being far from proper to follow the general practice of



INSIDE VIEW OF A PRACTICAL SHEEP BARN AT "CLOVER HILL FARM" opening the top doors and keeping the bottom ones closed. The floor of hay mow is 8 feet from barn floor, so there is great room for fresh air. Sheep need clean dry bedding and plenty of ventilation. With all these doors and windows and a high ceiling, it is a model barn for summer. For winter the top doors and windows admit ample sunshine. On this side of barn at further end upstairs you will see a window and chimney. They are from the shepherd's room which is plastered, painted and fixed up like a house. The stairway from it comes to the barn alley-way. The space, 16 feet square, under his room, instead of being a sheep pen, is his for feed, etc.

The outside wall of barn is of the best quality of matched drop-siding without knots making it practically air-tight. The barn when full of sheep can never be completely closed without soon becoming too warm. We believe in a tight barn and then use windows for ventilators. Cracks between the boards are improper ventilators although the way some barns are built would indicate that their owners thought cracks were just right. When a barn is built with best drop-siding and has hay above it can be easily kept warm enough for young lambs in nearly any weather.

We have used this kind of barns at "Clover Hill" for several seasons and have had no reason to even slightly change them in any way.

THE SHEPHERD'S WORK.

The shepherd's work is an endless task and whether he is owner or hired man his thoughts must be centered on the welfare of the flock. If you are the owner and are working with the sheep there is no doubt but that you are deeply interested in the success of the flock but when you hire a shepherd be sure that you get a real one that knows a great deal about sheep. Every day in the year there is something to do and it must be done well.

When the ewe flock is sorted in the autumn to be bred to certain rams because you believe they will produce the highest class lambs from such mating you do not want a man who is so careless that the ewes might be bred to any ram just so they get with lamb. It is the good shepherd who plans out what should be done at all times and then combines perseverance with thoughts and brings about everything as planned. Numberless flock-masters and shepherds know what should be done but that number would be greatly reduced if it were to be confined to those who put a large portion of their good ideas into practice. There is just as much difference in the management of flocks as there is in flocks themselves. Proper caring for a good foundation flock leads on to success but it doesn't matter how good the foundation may be if they are poorly cared for—failure to some extent will be the result.

The good shepherd is continually thinking about how he can improve the flock and surrounding conditions. In this way he is also improving himself and his income. Breeding and feeding are his two principal studies and they must always be combined. In a pure-bred flock he must be conversant on all pedigrees of noted rams and ewes and upon the merits of the leading flocks. This knowledge will enable him to make selections of sires or ewes for flock addition that will probably produce lambs of the same high type. This enables you to properly found a flock and keep it making rapid progress upward in quality.

Sheep properly fed will be fully developed, and the good individual well developed is par excellence. To assist nature must be your desire and not to work against her. When a sheep or any other animal does not receive more than enough for each day to simply replace the strength which is expended in living and exercise it becomes "stunted" or is too small and lacks bloom.

Good feeding does not necessarily mean a heavy allowance of fat-producing food such as corn, etc., but in breeding sheep it implies plenty of food which will build up muscle and bone and tend to growth, not fat.

Oats, bran, linseed cake, clover hay, etc., have helped bring our improved breeds of sheep to their present high standard of perfection and will assist us in raising this standard still higher.

Careful methods of breeding give us the proper material to work on and good feeding enables us to assist nature in developing it fully. If your sheep lack in breeding, the same amount of feed will not give you as large returns as it otherwise would, and on the other hand it doesn't matter how well bred a ram or ewe may be if it isn't properly fed it will never be as strictly first-class as it might have been. Therefore we say that the shepherd must have a thorough knowledge of the best blood of the breed he is caring for and know how to feed for full development.

The flock that is well and properly fed has very few ailments so when you learn to feed well you have torn out a number of pages in your "doctor book." The sheep's system which is properly nourished by clean food will rarely get out of order and that covers it all. Coarse, half-spoiled old hay and ice-cold water in the winter time would nearly give anything indigestion, and possibly chronic, too, but that would not be good feeding. A barren old pasture or one with stale grass and dirty water might not make nice fat lambs in the summer, nor you couldn't expect it to. Bred ewes in the winter placed in a roomy well-ventilated shed, bedded with clean, dry straw, and with a small allowance of oats and bran, and well-cured clover and corn-fodder for rough feed will thrive well and produce heavy fleeces and a good crop of strong lambs. If lambs in the early summer are turned on a patch of rape, kale or some good fresh feed they will thrive and be a credit to any farm.

There are always two ways to do a thing, and you want to be sure that your sheep are bred, fed and managed in the right way.

NECESSARY PRECAUTION IN THE LAMBING FOLD.

Should any ewe die, abort or strain after lambing she should at once be removed to a safe distance and the wood-work and pen it occupied must be thoroughly disinfected with carbolic acid or other disinfectant, and all the litter, etc., burned. It is also wise to have in the lambing fold a tub of live lime with an empty tub and shovel alongside. All cleansings, etc., should at once be placed in the tub and a shovelful of fresh lime thrown over it. By this simple process the lambing fold is quite free from unpleasant smells and the possibility of contagion from unhealthy matter is greatly minimized. These may appear, to some, unnecessary measures to adopt but those who have noted the disastrous results brought about by carelessness will readily see the desirability of carrying out these suggestions.

Much of the so-called bad or good luck is usually traceable to the treatment the ewes have received during the pregnant period and a high rate of mortality amongst ewes and lambs is often the result of their being kept on cold wet or barren soil.

ASSISTANCE IN LAMBING.

As a general rule it is better not to interfere too soon but it is easy to tell when to assist Nature. In all cases where help is given carbolized oil should be freely used on your hands and arms before operating, and in bad cases and when a ewe has been assisted with decomposing lambs the carbolic oil should be poured into the vagina by raising the hind legs of the ewe and allowing it to flow in. Great care should be exercised in such cases and when disease is rampant to wash your hands, etc., with carbolic soap after each operation and freely use disinfectants, in fact, you should never go from a bad case to assist a healthy ewe without taking every possible precaution to prevent contagion. All the surroundings such as litter and food of any case where disease was apparent should be removed and burned and the pen thoroughly disinfected without delay. A barrel with a hinged lid with some nice dry hay in it is a capital place to put a sick or weakly lamb in and is really much more effective than placing it near a fire.

For a very weak lamb, a large flat India rubber bag filled with hot water is far preferable to fire warmth and has been very successful in saving life.

TREATMENT AND FEEDING OF EWES AND LAMBS.

It is important to get the ewes with lambs out of the shed pens as soon as possible except in cases where lambs may be too weak. Sunshine and fresh air are as essential to their growth as food. Of course the ewes must be fed so they will give large quantities of milk. If you will notice the condition of young lambs in flocks where different methods of feeding are practiced you can readily see what proper feeding to the ewe does for the lambs. There is marked difference when one lot has been fed corn or corn fodder with timothy hay and the other fed linseed cake, oats, and bran, the lambs from the former being weak simply because they have never received sufficient nourishment from the dams. The ewes were unable to give it to the lambs because their own food did not give such nourishment to their bodies. Corn and timothy hay do not build bone and flesh; they are fat-producers. Linseed-cake, oats and bran, together with clover hay, stimulate the milk flow and indirectly produce large, vigorous lambs. The gain from properly feeding the ewes at this time is so great that all breeders should give the subject their careful consideration. Where rye can be raised sheep breeders are fortunate, because a patch of green rye for the ewes and lambs is valuable in addition to the dry feed. That food combination could hardly be improved upon. The "youngsters" like a bite of green stuff and soon will be eating quite a little. If there is no rye it is well to have a fresh pasture that comes up quickly in the spring. This green food assists both ewes and lambs in thriving better than if they were confined to even the very best of dry feed, so it is good policy to get them all outside as soon as they are strong enough and the weather will permit. The lambs can also be pushed on by giving them a small amount of grain by themselves each morning and evening. For this, a "creep" can be made easily and cheap. If the flock is being shedded each night a corner of the shed can be used for it. A simple creep is made by taking two 1x6 inch boards and placing them far enough apart to make a partition which ewes will not jump over, then nail slats on far enough apart so the lambs can go through, but the ewes cannot. If the flock is placed only in a pen at night a corner of the lot could be taken the same as in the shed. Put a little trough in there and the lambs soon know what it is meant for. Feed to make them grow, not fatten, and when the lambs are yet real young it is well if the oats in the ration are crushed. If lambs get this grain, a liberal amount of milk from their dams and some grass or rye, you may rest assured that you will get the most from your flock. Lambs which have been well fed in every way always mature to be much larger, stronger, and with heavier fleeces than the others.

EAR-MARKING THE YOUNG LAMBS.

Some pure-bred flockmasters experience difficulty in keeping the young lambs properly marked so it can be readily told which dams they belong to. Of course, some people can tell just which lambs belong to different ewes, but to depend upon that very long after the lambs are born is very uncertain. However, the cartilage of a lamb's ear until it is quite well grown is not very strong, and tags should not be put in the ears, because sore or improperly formed ears might be the result. Therefore, the use of tags for real young lambs is not to be recommended, nor should anyone depend upon remembering where every lamb belongs, but the safe and sure method is to punch small notches in the youngster's ears and then the tags can be correctly inserted whenever you are ready. The ordinary ear punch is used for this purpose, and we herewith give an illustration of one system of marks and their meaning. If the numbers on your ear tags do not run up very high, the same number could be notched in the ear as the tag you wished to later insert. If the flock is a large one, a note will have to be kept of numbers in order that no mistake will be made. For instance: Suppose this year's lambs would be tagged from tag 500. Then the lamb notched 1 would require tag 500, 2 would require 501, etc. There would be no conflict in starting each year's lamb crop with notch 1, because in the autumn they would be ear-tagged and there would not be anything but lambs without tags. This system of notching is also very beneficial when older sheep lose their ear tags, because these notches will identify them. Suppose a three-year-old ewe lost her ear tag; you could get her notch number and age and then look up the ear tag number of such a notch that year. That would enable you to get correct duplicate tag. We believe this system would profit all pure-bred breeders, and the illustration makes its detail quite plain. If you wanted to number a lamb 253, a hole through the ear and a lower notch next to the head would be punched in the right ear and a notch in the tip of the left ear. These marks are lasting, and when once you become accustomed to the number indicated by each notch it is a very simple system. These small marks do not injure the young lamb's ears, and it is much better than to insert heavy tags before the ears are fully developed.

DIPPING.

As soon as practicable—say when the ewes are shorn and before the lambs are weaned—they all should be dipped, and, to entirely keep ticks off, the process should be repeated in autumn. The object of dipping is to destroy the parasites in the fleece, to kill off any young insects which may afterwards hatch out and to protect the sheep from subsequent attacks.

Experience has taught us that sheep thrive much better when their skins are clean, and it has been clearly proved that a good dip increases the quantity and improves the quality of the wool. It is absolutely impossible for lambs infested with ticks or other parasites to thrive properly, owing to the constant irritation set up. In trying to get relief lambs often nibble at the fleece and swallow small portions of wool, with fatal results. A good and regular system of dipping the entire flock is money well expended. Hence, most leading flockmasters dip twice in the season, once as indicated, and again in the autumn.

The modes of dipping are various. For small flocks the hand-bath is in general use, but the swim-bath is by far the best when flocks are large enough for its adoption, as this system gives much less trouble, saves labor and expense, and the operation is far more effectual.

WEANING.

Weaning if not conducted with care and with proper forethought will often lead to a derangement of the system of the lambs.

In some cases, at a very early period, the lambs are separated from their mothers and at once placed on an old pasture, which is perhaps burned up and totally unsuitable to the tender stomachs of the lambs. The sudden transition from the milk of the ewe to the dry summer food is beyond the power of their digestive system. The new food is not properly assimilated, conequently general derangement of the stomach and system immediately follows.

To prevent these evil results, the food supplied at weaning time should be of a highly nutritious quality, such as can be easily assimilated, and if the weather is hot and dry a plentiful supply of clean water should at all times be available.

The date of weaning depends on the locality, and the breeder must be guided by circumstances. Early weaning is in most cases to be recommended for the following reasons: Keep is plentiful at this season, and this affords an opportunity of giving the lambs the best pastures and putting all the ewes into one field instead of being all about the farm robbing the lambs. In some districts weaning is so late that aftermath clovers are available, but in the majority of cases this will not be so, and if rape or other green crop be to hand, so much the better, as the object is to minimize the loss of the milk as much as possible. A little grain should be given, but it must not be of a heating nature, probably nothing surpasses good crushed oats with bran and oilmeal. The lambs should, as soon as rape can be got, be put on the arable land and pushed forward in a healthy, natural way, avoiding an undue proportion of artificial food. As the harvest is cleared the aftermath clovers afford a good change for the lambs. Close folding, if possible, should be avoided, as it tends to fatten and not to develop muscle and strength, which should be the object in a breeding flock. By this is meant that the hurdles should not follow close upon the lambs, but that they should be allowed to roam at large over the field.

The experience of breeders during the last decade seems to point to keeping the lambs from the period of weaning right through the autumn on arable lands, eating a variety of green foods—turnips and young clovers, and not on old pastures.

To carry this out the breeder must exercise a little forethought and arrange for a succession of kale, rape and other suitable foods. This can be esaily done by planting so much winter rye in the autumn, following up with early cabbage, planted in March or April, according to the weather, the drilling of the early Enfield cabbage at intervals during the spring and summer months, assisted with white turnips, rape and kale in suitable quantities. A large flock can be kept in this manner.

NOTING THE EWES WHICH ARE BEST BREEDERS.

The lambs from each ewe should be carefully noted, so that when the sorting comes usually June or July) it can be seen which ewes are breeding satisfactorily, and what class of ram suits them best, because possibly some of the most promising lambs may be the offspring of ewes that would otherwise be discarded. In a pure-bred flock a regular system of sorting at a certain age cannot be followed with advantage, for in some cases it is wise to keep a ewe—a good ram breeder—as long as she will continue to breed, while others which produce nothing good as yearlings or two-year-olds may safely be put aside.

At the same time the breeder should try to continue a plan which keeps the flock from degenerating into a lot of old ewes.

As to the number of ewes which should be selected annually, one must be guided by circumstances. Should the young ewes be exceptionally good, and by one or more sires which you have a high opinion of, it will be wise to draw for the breeding flock more largely than usual. If, on the other hand, the yearling ewes are not to your liking, it may be well to add none to the breeding flock, but dispose of all the young ewes. These matters must be left to the judgment of the breeder, but all such details are of great importance, and whether they receive due attention or not means success or failure.

As before stated, it is sound policy to manage the flock so it will not deteriorate into a lot of old, worn-out ewes, and with due care this can be avoided. A well-bred and good young flock must always have a far higher value than one in which several of its members have passed the prime.

THE GROWING OF ALFALFA: ITS COST AND VALUE.

H. H. DUNCAN, SEATON, ILL.

Before Louisa County Farmers Institute.

You know we Americans have the habit of asking the cost or value of an article or structure, in which we are interested or amazed at. And so it is with this subject of Alfalfa. We certainly are interested, and may be slightly amazed before I get through.

Alfalfa is new to us here yet. Is still in the experimental stage. But is gaining new territory very rapidly, and in ten years from now, it will be a common sight in every community, because of it's rapid progress and coming value to us as a feed and fertilizer.

ALFALFA VS. CLOVER.

As you all know clover has been our mission to the soil in saving it from destruction. And also giving returns as a forage crop. And in this respect alfalfa and clover are similar, as a feed and fertilizer, but alfalfa has the advantage in both. As a feed, a ton of alfalfa is worth one and one-half tons of clover. Some estimate it worth two tons of clover. And as a fertilizer, alfalfa corn ground yields from twelve to twenty bushels per acre more than clover corn ground. They are different in that alfalfa is a perennial plant, growing for a number of years without reseeding while clover is a biennial plant, only growing for two years without reseeding. The root system is different with both. Alfalfa has a tap root system; large roots penetrating deep into the soil; while clover has a fiberous root system feeding nearer the surface.

They used to say that alfalfa was an arid or semi-arid plant, and grew best in that region, but they have broadened that statement, or we are included in that region or the plant has outgrown its territory, for it has been found to grow on any productive soils in the United States; it grows well in Texas on the south, California on the west, Canada on the north, Virginia on the east; so we see the wide territory that it covers, and no reason for not growing it successfully here.

Now since we see the vast territory it covers, the different soils that produce it, and the various climate condition it grows in; we should have no doubt as to its success here. And in looking for a patch of ground to grow it on, consider the convenience or the fertility improvement.

Having selected our ground, we are ready for the start. The first thing to be done is to manure the ground well before we work it any. The value of manure has been thoroughly tested; of great value to the starting alfalfa.

We have two seasons in which to sow it, the fall and the spring. The success of either depends somewhat on the season. We have found the fall the best; though have experimented with each. With the spring seeding you may have to mow it several times to keep the weeds down and get no crop of hay, but if conditions are favorable you may get a crop or two of hay. While with the fall seeding you have no bother and the alfalfa starts ahead of the grass and weeds the next spring and keeps ahead, three good crops can be cut, giving good returns. Besides you haven't lost a crop, having harvested wheat, oats or rye off the ground.

In preparation of the seed bed for spring seeding, the ground should be plowed medium depth, but still better if plowed deep the fall before. For fall seeding the ground should be plowed if in good condition but if too dry just be disced thoroughly, about two or three good double discings making the best possible seed-bed.

Having the seed-bed well prepared we are ready for the sowing, and the first thing to sow is inoculated dirt; which looks like a rather skeptic thing to sow; but when we see the value of it we are soon convinced of its value in alfalfa growing, for it contains the bacteria germs, which are essential in aiding the plant to make use of its chief element, nitrogen, as a plant food. These bacteria germs or nodules grow on the alfalfa roots from one to six inches deep and are about the size of the head of a pin. Sweet clover bacteria gives the same results.

In getting this dirt, dig it from some old alfalfa field at least a year old, or sweet clover patch; as it takes from 100 to 200 lbs. per acre. Use a wagon; get the dirt as dry as possible, and you can sow it the old-fashioned way of sowing oats out of the back end of a wagon, and better, shovel it into a box or a basket set in the rear end of a wagon as it will not harden so quickly. It takes two, one to drive, and one to sow; about twenty feet can be sowed at a throw. You can get over a good deal of ground in a short time. Now when enough alfalfa has been grown, the soil will all become inoculated through natural agents, as wind and water.

If you cannot get your seed near home you had better send north for it, as the northern grown seed is the strongest, having more vitality for this locality. If you get the best seed 15 to 18 lbs. per acre is plenty, and get it sowed as evenly as possible. If sowing with a broadcast seeder better go over the ground two or three times so as to get it on as evenly as possible. After it is all sowed and harrowed in you have nothing to do but to tell your neighbors about it and watch it grow. Next spring before any other plant has started, your alfalfa will be green and growing and before you know it you will have a crop of hay, about the first of June.

The time to cut the alfalfa is when about 10 per cent is in bloom, or when the next crop beginning to start at the root. When you have mowed it cure it about half in the swath, then rake it into the windrow for the balance of the curing, as the leaves do not drop off so badly. Alfalfa will stand more rain than clover hay without hurting. The first crop comes about the first of June, the second the middle of July, and the third the last of August. And maybe the fourth will grow up a foot or two, but better leave it or pasture it some as to protect the ground through the winter. Now the following year after fall seeding off of three cuttings you will get from 2½ to 3 tons per acre and the second year about 4 tons per acre.

The cost and value in dollars and cents, taking a ten acre basis:

Plowing or two double discings	$10.00
Harrowing	2.00
Sowing dirt, one ton, two men, ½ day	3.00
Cost of seed, 180 lbs.	36.00
Seeding	2.00
Harrowing	2.00
Total	$55.00

The cost of harvesting, 10 acres, 3 cuttings:

Mowing	$10.00
Tedding, raking and curing	18.00
Putting up, four men and a boy, three days	27.00
Total	$55.00

Value of hay crop, 2½ tons at $14.00 per ton	$35.00
Value of second year crop, 4 tons per acre	56.00
Increase in corn crop 15 bu. per acre	7.50
Total two years	98.50
Minus expense	18.00
Net	$80.50
Per acre	$40.25

Summary.—Manure good. Make a fine seed bed. Inoculate, sow dirt. Use good seed and sow even. Mow when next crop starts. Cure as fast and dry as possible without losing too many leaves. Rain does not hurt it as bad as clover. Ton of alfalfa equals 1½ tons of clover.

ALFALFA.

South Dakota Agricultural Experiment Station.

BY CLIFFORD WILLIS, CHIEF IN AGRONOMY, AND J. V. BOPP, CHIEF ASSISTANT IN AGRONOMY.

Introduction.

The interest manifested in this forage plant shows its widespread and rapidly increasing popularity. Of seemingly unlimited productiveness, unhampered by many factors which affect the growth of corn, cereals and grasses, it keeps pushing its boundaries, north, east, south and west, to higher altitudes, until only few areas are not supplied. In these regions where it is unable to produce from four to six cuttings it is content with one or two, and even then when given a chance by a favorable season, responds with a third.

Inquiries concerning the culture indicate a determined effort on the part of all farmers to produce this "queen" of nitrogen-gathering legumes. The organisms which live in the tubercles on the alfalfa roots are the poor man's friend. "They not only work for nothing and board themselves, but pay for the privilege."

The history of alfalfa has been written so many times in bulletins, various text books and the agricultural press, so that a resume of that phase of the subject seems unnecessary. Civilized man in his march of conquest and settlement has carried it with him into all countries. Its introduction into the United States has been both from the east and from the west; the greatest progress, however, has been from the west, because under these conditions it thrived more luxuriantly, proving its value more conclusively as a great forage plant.

Medicago sativa L. is the botanical name by which alfalfa is known. The different varieties or strains, if we might call them such, have been originated from this and are only distinct from it in so far as hardiness or productivity are concerned.

TYPE OF SOIL.

Because alfalfa is so widely distributed in the United States it is so often taken for granted that it is able to make the best of any soil condition, and many failures can be attributed to just such conclusions. Its hardiness and deep feeding root system does not necessarily make it a crop which does not respond unfavorably to indifferent treatment. The selection of the field is of prime importance and must receive due consideration if alfalfa culture is successful.

Locality, altitude, soil type, position, do not have such dominating influence as the moisture conditions. The rather crude expression so commonly heard, "Alfalfa will not stand wet feet," is literally true, as many have found to their disappointment and expense. Choose a loamy surface with good drainage, which can be best obtained on a sloping hillside. The water table should be from two to three feet below the surface, and the subsoil should be porous enough to permit the roots to penetrate to the saturated soil beneath. If the soil is hard, impervious and water-logged, less than three feet beneath the surface, alfalfa is unable to utilize its deep feeding root system, and we lose the best results which recommends it to the farmer. A sloping hillside has the advantage in not having low, wet, flat spots in it where ice may form, which is as detrimental as standing water to a good stand. We have observed alfalfa which died on a well drained soil when covered with ice during the opening of spring.

When the plants are dormant the field will stand flooding, but not ice. So it is very essential that if a soil is low and subject to standing water, that complete drainage be inaugurated before the alfalfa is seeded.

A soil intended for alfalfa must not be acid, otherwise any attempt to grow alfalfa successfully will be a failure. Soils in humid regions are more likely to be in such condition, making it necessary to apply lime to correct acidity.

The bacteria are likewise present in all our soils, so that inoculation is not necessary. Care should be taken when an examination is made for tubercles to dig out the plant carefully with a spade, because when a plant is pulled from the soil the nodules are apt to be stripped from the roots.

Only second to well drained soil should be one which is free from weeds. This can hardly be over emphasized, because many a field has been ruined by an early influx of weeds. The choosing of a field should have this in view, because more intensive cultivation can help to this end.

Unsubdued sod or any soils which have not yet been brought into good tilth should not be seeded to alfalfa.

PREPARATION OF THE SEED BED.

The grower who has his crop of alfalfa well started is more than half way on the road to success. While the selection of the field bears such an important part in successful alfalfa culture, the preparation of the seed bed is only of secondary importance. The successful farmer plans months, even years, ahead, in getting his field into shape for this crop; for the crop is to remain from five to ten years, so he cannot well afford to neglect any of the initiatory details. Money and time spent in the preparation of the seed bed, instead of in the purchase of a larger quantity of seed, will insure better stands, and this would be instrumental in extending the crop in this state.

This phase of alfalfa growing has been discussed much, yet it seems to be not entirely understood by the average farmer. Until we are made to fully realize and appreciate the need of a good seed bed we will be indifferent and put the seed into poorly prepared ground. The field should have been plowed long enough to enable the soil to be worked down and settle and fill with water. A loose, open, porous soil may be all right for potatoes, root crops or corn, which contain a large amount of food in the seed and which comes in contact with it, but is entirely unfit for alfalfa seed. He who sows his seed on freshly plowed ground with slight pulverization, can hope for nothing but failure in securing a stand. The first consideration in handling a field should be to get rid of the weeds. Nothing will be of greater service in this respect than to begin early and persist in combatting them before the crop is sown.

The first choice of a previous crop is a well cultivated potato field. This puts the soil in good condition by conserving moisture and making the soil mellow. Weed and grass seeds are made to germinate and are then killed. Second to a potato field comes one which has been cropped to field peas. The peas should be seeded thickly enough to smother most of the weeds, and then after the crop is harvested the field should be plowed from five to six inches deep. Then leave the field in this uneven plowed condition during the winter until early spring. As soon as the soil is dry enough to work, disc well and harrow. This hastens the physical improvement, compacts the soil, loosens the surface to prevent evaporation, and induces the soil to warm up more rapidly, thus starting the germination of grass and weed seeds. If the ground becomes weedy, the disking and harrowing should be continued as often as required to kill them, because they are easily kept in check while young. This treatment should be continued until seeding time.

When it is desirable to put a stubble field in shape for alfalfa, it should be plowed early, or if this cannot be done, it should be disked at once. A disked field should be plowed later without much troule, while the disking foul seeds are made to germinate.

When the seeding is done soon after the plowing, the proper seed-bed may only be made by disking and harrowing or even the use of a sub-surface packer. When such is the case, disking before plowing is essential, because a seed-bed is then prepared which is turned under by plowing. Under such treatment a six-inch bed will be assured, while with a single plowing the bottom of the soil will be loose, cloddy, filled with trash and not connected with the soil below the plow line. A firm connection with the sub-soil is preferred, so as to permit the capillary rise of water, a mellow covering aerates the soil, and takes up heat, so that rapid germination and growth results.

Great care should be taken in disking in the spring, so that ridges are not thrown up. These must be harrowed down and the surface made perfectly level, otherwise the stand will not be uniform. In disking an advantage may be gained by lapping half, so that the uneven soil is thrown back again, then by harrowing the uneven surface is smoothed down. The planker can be well utilized both before and after planting to leave the surface compact with still a loose covering of soil.

When a sod is deficient in available plant food and where the organic matter has been worked out, an application of manure is beneficial. This induces a vigorous growth while the plants are young and tender, so that they become more hardy. Alfalfa is a deep feeder, it is classed as a soil restorer, and while it gathers nitrogen from the air, it feeds heavily on the phosphorous and potassium in the soil. Plant food supplied to growing alfalfa will give quick returns and profit to the grower. Worn out soils should be first improved physically by incorporating manure and organic matter in the soil; however it should not be seeded to alfalfa until this material is well rotted.

PURE SEED.

A prime requisite of the alfalfa grower should be that he demand good seed. It is not only necessary that it be strong, possessing vigorous germs, but it should be clean and free from foul weeds. Many a well prepared seed bed has been seeded to poor, foul seed, and after the failure the grower has given up the growing of alfalfa for all time; a failure at this time spells *failure*, quite likely to him, for all time. Nothing discourages the grower more than such a result, and an unsuccessful trial may indirectly inflence his neighbor.

Good alfalfa seed possessing high germinating power has a bright golden color and when rubed between the thumb and fingers appears glossy. The experienced farmer can readily distinguish the poor seed by its rather brownish color and shrunken appearance. Some years olive green seeds are mixed in with good seed; this is caused by uneven ripening of the crop; however, such seed is good. The Turkestan variety has somewhat of a dull color even when well cared for. The grower should demand good seed, especially clean seed, for several very noxious weeds may be introduced into the field if due care is not exercised. If the seed is not clean it should be run over a dodder screen. Foreign seeds are more dangerous than inert material, hence it behooves us to look to this very closely.

Any farmer can make a germination test for vitality, and this the only safe and accurate way of knowing whether the seed will grow. Place some sand on a plate and cover it with a piece of blotting paper or cloth. Upon this place one hundred kernels of alfalfa seed which have been taken from the lot. Place another cloth or paper over this and moisten it, but use care not to get it too wet. Then cover with another inverted plate and set aside in the living room. At the end of a week the seeds may be counted and from those germinating the per cent calculated. Those which germinate within four or five days may be considered strong in vitality and very good seed; while a weakly germ denotes poor seed which will perhaps only grow under the best of field conditions. Good seed should test better than eighty-five per cent and will require the minimum amount of seed per acre, while mixtures of strong and weak will require a heavier rate of seeding.

QUANTITY TO SOW.

Growers are less agreed on the actual amount of seed required to secure a good stand than on any one point connected with alfalfa culture. The quantity varies from eight to twenty-five pounds per acre, and there are many instances where perfect stands have been obtained from seeding ten to twelve pounds. A larger quantity seems a waste. The Ohio Experiment Station has found that five, ten, fifteen, twenty and twenty-five pounds per acre gave yields respectively of seven thousand eight hundred sixty-two, eight thousand six hundred forty-eight, eight thousand five hundred fifty-seven, and seven thousand eight hundred and seventy-six pounds per acre. According to Farmers Bulletin No. 339, one pound of alfalfa seed contains over two hundred twenty thousand seeds, which give more than fifty plants for every square foot, if sown at the rate of ten pounds per acre and all seeds grew. This is quite sufficient for any soil, and a good seed bed with a uniform distribution would insure this result. The concensus of opinions, and the practice of most successful growers on both non-irrigated and irrigated land is, to sow about fifteen pounds to the acre.

METHOD OF SEEDING.

The average farmer does not have a special grass drill, neither does he look favorably towards the suggestion of purchasing one. Consequently the alfalfa must be seeded with the machinery already on hand. An investment in a special seeder would more than pay for itself if any considerable acreage is to be sown to alfalfa. Alfalfa can be sown with any good wheat drill if it is mixed with finely ground corn or with some dried boiled millet seed. The Oklahoma Experiment Station recommends that a mixture be made of two-thirds ground meal and one-third alfalfa. With such a mixture from three and one-half to four and one-half pecks will be required to supply from twelve to fifteen pounds of seed. With grass seeder attachment or a drill the feed can be properly adjusted to the proper quantity. We must bear in mind to run the shoes shallow, for the seed should be covered with only a thin layer of soil unless it is sandy, when deeper seeding is necessary. The uniform depth of seeding, which is so essential, cannot be obtained if the ground is more or less rigid. When the spouts from the grain seeder attachment conduct the seed into the shoes, too deep covering is apt to be had on heavy soils. When drilled soil may be washed on the grain, even if it is placed at the proper depth.

Alfalfa can be, and is, often sown broadcast and then harrowed. When broadcasted, heavier seeding is necessary and care must be exercised to harrow at once. Just at the time when the young plumule is pushing its way through the surface, hot weather has a tendency to injure it. This has also been reported under broadcast seeding, when rain prevented harrowing them into the ground. The general practice among our best farmers is to sow alfalfa without a nurse crop, although it may be deemed advisable, whenever the soil is sandy, to use a light seeding of small grain. The purpose of this is to prevent the sand from blowing. Four pecks of barley or oats per acre will be sufficient, because a heavier rate of seeding may grow so rank as to choke out the alfalfa. The grower should watch the crop closely, and when in his opinion the alfalfa is suffering, indicated by turning yellow, he should cut the crop at once.

MANAGEMENT OF THE FIELD.

Ordinarily no treatment is required the first year after seeding, beyond clipping the growth of weeds. It is sometimes a good practice to harrow a newly seeded field after the plants have attained a height of three or four inches, in order to loosen the surface and aerate the soil, because young alfalfa plants are easily affected by a compact surface soil. The loose covering of soil on the surface covers the capillary tubes, which will be instrumental in conserving soil moisture. When harrowing, the levers should be set so that the teeth are inclined at quite an angle and then weighted down so that it will penetrate the soil. Such treatment will pull out some of the small weeds, cover up others, and will not pull out many alfalfa plants because of their long tap root.

When practicing clipping, judgment must be exercised so as not to set the mower too close to the ground, because the plant should not be cut off below the lowest branch. Early mowing is therefore better, because the tips will then be removed, which will cause a branching of the plants and a more vigorous growth. We must remember that the young growing alfalfa plants require quite a top growth to balance the root development. Too close mowing will disturb this balance and many plants will die outright or be so decreased in vigor as to be unable to survive the summer. Harrowing after clipping is beneficial, and recommended. The field should be allowed to go into the winter with from eight to ten inches of growth as protection.

Cultivation is as beneficial to an alfalfa field as to a cultivated crop. Continuous mowing and travel compacts the soil to such an extent as to interfere with proper ventilation. Often it is necessary to drive and work on the ground when it is not in fit condition, and this continued for a few years has a very compacting effect on the soil. The disk harrow is used very widely and recommended for cultivating after the first year. The disking should be shallow the first years and the angles of the pitch should be such as not to turn the soil. It may, therefore, be necessary to weigh it down so that it will penetrate the soil to a depth of two inches. Good results have been obtained by disking the second and third years early in the spring or after the removal of the first crop. As long as the plants are under three years a single disking is sufficient every year however, following this, two cultivations are preferred. The smoothing harrow should follow the disc in order to level the field again.

Alfalfa does not spread nor cover the ground after the stand becomes thinner, as grasses or clovers. Whenever a plant dies, such a place is left vacant, and either weeds make their appearance or the surrounding plants grow with increased strength and vigor to utilize the empty space. In such instances disking has good effects in cutting out the weeds and splitting the alfalfa crowns. One root stalk with only a few branches can be made to throw out many more, and the hay crop will not be appreciably decreased.

The common disc harrow is widely used for cutting up an alfalfa field; however, another implement seems to be more beneficial and satisfactory. This new tool, instead of having continuous edge discs, has strong sharp teeth from the axle of the disc, which do not cut, but dig and tear loose the soil. There is no danger of cutting off any alfalfa plants, but on the other hand, it is not so apt to split the crowns.

It seems best to cultivate as soon as moisture conditions in the spring will permit, or after the first cutting of hay. If a single cultivation does not loosen up the soil sufficiently, a second treatment should be given. The cultivation may be both lengthwise, with the disc lapping one-half or the second disking may be done crosswise. The latter treatment, if not well harrowed, has a tendency to leave the soil thrown in little blocks, yet a good harrowing or dragging will level the field. It is important that the harrownig should be thorough with either method of soil treatment. A single stirring of the surface may be sufficient during one year, although another can be given with profit, depending of course upon the condition of the field. Ofttimes it may be found that a good harrowing after the second crop is removed will be all that is required.

HARVESTING.

There are a few localities where it is almost impossible to harvest alfalfa unless some of it is injured by rains. In fact, some good farmers say they will not grow it because of this. However, another grower has said that he never lost a crop in eight years' experience of alfalfa growing. These men are both living in the eastern part of South Dakota. The grower must plan his spring and summer work with reference to taking care of the hay crop.

The best time to cut alfalfa is when about one-tenth of the blooms are out, or if an examination is made at the base of the stalk new shoots are seen to make their appearance. Many times it is even practical to cut the first crop a few days earlier, especially if a large acreage is to be harvested. Time is one of the controlling factors in taking care of the hay. So that it is necessary for the grower to exercise judicious planning so as to utilize his time to better advantage.

It is a good plan to start the mower as soon as the dew is off in the morning and the prospects seem good for two or three days continued good weather. This hay should be tedded in the swath in the afternoon, so that it will dry out underneath. The side delivery rake is good, in fact the ideal machine to turn the hay. Beginning on the outside of the field, the hay is carried further out, leaving an open space which will be heated by the sun before the next round is made. On turning the next swath the dry hot stubble and soil will quickly draw the moisture from it, therefore the hay is curing from below as well as from above. The following morning the same rake is used as soon as the hay is sufficiently dry, and two swaths put in one, and in the afternoon it is ready to be stacked or hauled into the mow. Ofttimes when the crop is very heavy, it is best first to put into small cocks and left to cure for a few days.

The following method is practiced, and lends itself admirably to taking care of a hay crop if it is not too heavy. The mower is run late in the afternoon, when not much wilting will take place and when the undergrowth is perfectly dry. The advantage of this over the early morning is that the soil is warm and dry, and that less surface is exposed to become wet by dew than when alfalfa is standing. The hay is turned in the following morning just before noon, and will be ready to rake and stack in the middle of the afternoon. Another plan is to rake in the afternoon and put it up in small cocks, turning these over the following day, replacing these two into one, and letting them cure for a few days before stacking. It is of the greatest importance that the hay be absolutely dry from dew before putting it into the barn or stack. Alfalfa is more difficult to cure properly than the grasses, because the leaves fall off so readily, and when we consider that these make up from forty-eight per cent of the crop by weight, their true value is very significant.

Whenever a late frost catches a crop and the tops turn yellow, it should be mowed at once, because the stalks will make a more rapid growth. The frozen parts of the plants will also discolor the hay, reducing its market value. The second and third cuttings are more easily taken care of, because the weather is more settled at that time. Hay cut late in the afternoon may be put up without any hesitation whatever, as far as its feeding value or market value is concerned.

DO SUGAR BEETS PAY?

A. E. MILLIGAN, LOCAL MANAGER OF THE IOWA SUGAR COMPANY, HAMPTON, IOWA.

Does it pay the average farmer to grow sugar beets? I am sure that it does pay. I have had twelve years experience in the beet fields and have had a chance to see the ups and downs of this crop. There have been years when the beet crop has been a partial failure. In Michigan, my home state, we think the beet crop the safest crop that the farmer can grow and the best money maker of any crop in the state. The beet roots alone, that we sell to the sugar factories, are not all the profit derived from growing beets. The tops are worth, Secretary Wilson says, five dollars per acre as a fertilizer, if left on the ground and plowed under, and if fed to milch cows they are worth the same. B. E. Ray, of Hampton, tells me that his beet tops from twenty acres have saved him nearly one hundred dollars this year. Mr. Ray took care of his beet tops by piling them up in small piles as fast as the beets were hauled and in this way he saved every top. Mr. Ray has grown oats and corn after beets; he says the yield of both were much better after beets than they were after any other crop. Earl Ferris had twenty acres of oats this year after beets; Charles H. Scantlebury had seventeen acres of oats after beets and Frank J. Scantlebury had thirty acres of oats after beets. These gentlemen tell me they had the best oats and the largest yield they ever had on their farms and they give the beets the credit for this big yield. This is another profit from the beet crop. Then another profit from the beet crop is that after the beets are harvested your land is clean and plowed for the next years crop. All you have to do is sow your oats and disc them in. One has only to look at the land where beets were grown this year to convince himself that this ground is worth several dollars more for next years crop than where corn or potatoes were grown.

Truman G. Palmer, secretary of the American Beet Sugar association, had this to say to the farmers in his address at the Commercial Congress at Denver, Colorado, August 17th, 1909. "Why sugar beets help the land." "In plowing for grain, we usually turn the soil over to a depth of five to six inches, but more often five. Beneath the soil we turn over, the ground is so hard the grain roots will not penetrate it and consequently all the nutriment our crops receive is drawn from the five to six inches of top soil. The general conception of a sugar beet is that it is one large root, but this is erroneous. In addition to the main root there are a multitude of small, fibrous roots which nourish the main one. These fibrous roots go down as deep as the earth is stirred and sometimes even deeper. The main or top root will go to a depth of four to five feet. When the main roots are plowed up in the fall, these fibrous roots are broken off in the ground, and, in rotting add humus to the lower strata of the soil, also leaving the minute roots to the full depth that they have penetrated. When other crops follow beets, the roots instead of going down only to the depth of the plowing, find the little enriched interstices left by the decayed minute beet roots and following them on down they draw nutriment from twelve inches of soil instead of from six inches of soil. In other words, the culture of beets doubles the soil without adding to the acreage. You will observe that while all of the long fibrous roots, from the size of a pin to double the diameter of a knitting needle, have broken off, many of them still are from one to two feet in length. When dried, the fibrous roots attached to each beet perhaps will weigh only one to two ounces, possibly even less than an ounce. If they average but three-quarters of an ounce to the beet, they carry down into the under strata of soil over one ton of humus per acre. Is it any wonder that such wonderful results are obtained through rotating other crops with sugar beets? How much money do you suppose it would cost to purchase a ton of decayed vegetable matter and distribute it evenly over an acre of ground and then bury it to a depth of six to fourteen inches, where it is most needed? Such an operation on a field of any size would bankrupt any ordinary farmer, yet this is just what the culture of sugar beets does for our farmers and at no expense whatever. In fact, it does it for him and pays for the privilege of doing it, inasmuch as without considering this advantage, the beets themselves yield the farmer the greatest profit of any crop he can raise. Besides this, sugar is carbon, hydrogen and oxygen drawn wholly from the atmosphere being merely the sunlight, the rain and the wind which sweep over the fields. The farmer who turns back all the byproducts loses nothing from his soil while with wheat every thirty bushels carries away sixty-two pounds of nitrogen, twenty pounds of phosphoric acid and twenty-six pounds of potash, fertilizing elements which today are worth $9.28 in the markets of the world.

Why are beets the safest crop raised? Because the frost in the spring does not injure the little plants. No frost in the fall can injure the crop, the wind does not blow down the beets. They are harvested and delivered in October, when the weather is fine and the roads are good. The beets do not spoil in the cribs. The farmer does not have to shovel them over to keep them from spoiling. The snow does not cover up the beets; if it does they are harvested and put in piles and covered up and can be hauled on sleighs. There is no chance to lose money on beets, if you have good land and are a hustler, as the beets are a crop that need to be hustled from start to finish. If you ever see a poor beet crop in Franklin county, you will see other crops an entire failure. Let me tell you what the Iowa Sugar Company agree to do in 1910. They will furnish the seed at ten cents per pound (15 lbs. per acre), seed to be paid for when you send your beets to them in the fall. They will furnish you a seeder to plant your beets a plow to lift them in the fall, free of charge. All the machinery the farmer has to buy is a cultivator, if you are not already supplied. They will pay at every station $5 per ton f. o. b. cars. The company pays all freight from every station. Where fifteen acres or more are contracted they will furnish families to do all the hand labor at $16 per acre, the farmers to furnish dwelling place for family. The beets will be taken care of by the company as fast as delivered. There will be no waiting for cars next year. The company agree to install beet dumps at any station where five hundred acres or more, are contracted for. The company has several stations where five hundred acres have been pledged for next year. At these stations the farmers are more than pleased with the beet crop this year and not one word has been said against the treatment by the sugar company. At Clear Lake there were one hundred and ten acres, with an average of ten ton per acre, and at Hampton there were one hundred and six acres, with an average of nine and one-half ton per acre. No farmer will grow less than ten ton of beets per acre, if he has good ground and does his work as it should be done. This means fifty dollars per acre, and your expenses for seed and hand labor are seventeen dollars and fifty cents. This leaves you thirty-two dollars and fifty cents for fitting land, seeding, cultivating, lifting and hauling beets to the station. A man can plant seven or eight acres in ten hours with our seeder. He can cultivate five to six acres a day. He can lift three acres a day. Teams this year hauled from two to three tons to the load, three and a half miles, making two and three trips each day. The same teams made three trips each day, two miles. Each man shoveled his beets on in the field and off at the car. From this statement any man can figure the cost of raising and delivering an acre of beets on cars at the stations.

Farmers, think this over and add this crop to your other ones as a rotation and a weed exterminator. This brings plenty of help to the farm at a time when you need help in your oat harvest, threshing and corn picking, as the beets come in between the other work. The beet tops are a great milk producer, when you have to put your cows on dry feed in the fall. If you are interested in this crop in any way drop me a postal card and I will call on you and talk this over with you. My time is for you and it costs you nothing.

GINSENG.

BY W. S. BEAR, DECATUR, IOWA.

History.—In bringing before the public any new variety of the well-known crops, such as wheat, oats, or corn, we need not mention their history. The majority of our readers would not be interested in that part, but would look for that which deals with culture, directions, yield and profit. But in writing of a new crop, we think it best to give at least a brief history of the plant.

Chinese Ginseng (*Panax*), to which American Ginseng is closely related, has been to the Chinese of vastly more importance, than quinine to the people of more progressive countries; while quinine is used for a limited number of ailments, Ginseng is considered a sovereign remedy for every malady to which human flesh is heir.

4013A — Bear's Ginseng Garden, D
Produced
worth of Stock in

W. S. Bear's Gingseng Garden, Decatur, Iowa.

Search in America resulted in finding near Quebec and Montreal, by Father Lafitau, a missionary among the Iroquois Indians, a plant (Panax quinquefolium), which not only resembles the Chinese root, (Panax Ginseng) in appearance, but possesses all its medicinal qualities. Roots gathered and dried by the Indians were sent to China, where they were so well received that a considerable trade sprang up. The roots at that time were purchased from the collectors for 35 cents per lb., this was about 1714 or 1716, and marks the beginning of our ginseng trade with China, which has been steadily increasing to the present date. The writer, W. S. Bear, sold his entire crop of roots in December, 1909, for $7 per lb.

NATURAL HOME OF THE PLANT.

At one time ginseng could be found growing wild as far west as the first tier of states west of the Mississippi and from Canada to the Gulf of Mexico. In the south it is found only in the mountains and high ground. In the North, it will be found on the low lands, and will be found making rich, luxuriant growth in the rich, moist, but well drained soil from which our oak, hard maple, beech and bass wood forests grow. Ginseng is never found in low wet muck soil, such as grows the tamarack and cedar forests. Soils, having a wealth of leafmold and fairly light in texture are most favorable to this plant. It is never found in open, it soon perishes under the rays of the summer's sun in the clearings, but thrives well in the shade afforded by the hard wood forests, with scant under growth.

CLIMATE AND LOCATION.

From what has previously been said under the heading of Natural home, of the plant, it will be seen that it may be successfully grown over a wide territory. It must not however be inferred from this that it can be grown *anywhere* in this territory. Efforts to grow it on the low lands of the south have proved a failure. The plant requires a cool climate, such as is found in the Northern states and on the high lands of both north and south. In selecting a location for a garden, be sure to give the northern exposure the preference, because the plants will be better where the rays of the sun, strike at an angle by the land sloping to the north. Such soil though well drained, retains moisture much longer then a south exposure. Second choice should be an east slope, third, a western hillside or well drained level ground is fairly good, but should have a little more shade.

SOIL.

At the time of selecting a location, soil should be taken into consideration. The best soil is a good mellow loam well supplied with decaying vegetable matter, and must be clear of stone, clods and chunks of wood or any other hard substance.

Never choose a hard clay, light sand or muck, these are not adapted to the requirements of this plant. Nearly any soil in the state of Iowa can be made, by the application of sand and barn yard manure, to grow a fine crop of ginseng. A short, comprehensive list of requirements might be given thus, any good, rich, well drained vegetable garden, furnished with the required shade.

PREPARING THE BEDS.

Spade the grund over thoroughly, pulverizing every clod, removing roots, and stones, to the depth of from twelve to sixteen inches. If your ground is not rich enough, spread on well rotted barnyard manure, about one or two inches deep, and work well into the soil. Now raise your beds four, six or eight inches according to the drainage required, make beds four feet wide with path, sixteen or eighteen inches between the beds. Plant seed two inches apart in rows and rows four inches apart, planting crossways of the beds. Roots in permanent beds, should be planted six inches one way and eight the other. When roots and seed are all planted, mulch to a depth of one or two inches with sawdust, that nearly rotted is best, though new dust will be found good. If you live near a woods, you may use leaves if you choose to do so, they of course, are the natural covering. Planting may be done in either spring or fall, but fall planting is much preferred.

SHADING.

Natural shade of the forest is considered best, but must not be too dense. The best artificial shade is made with laths. Make sections four feet square, requiring 27 lath for each section 24 one way, with one at each end to nail to. Weaving the middle one in will greatly increase the strength of the section.

These sections should be put on with the cracks running north and south, in this way the changing position of the sun, will make a continual change of shadow on the plant. This frame may be placed only high enough to miss tops of plants, about 18 in. or two feet, or may be made high enough to walk under, the latter plan is much the better.

DIGGING AND PREPARING FOR MARKET.

Roots are best dug in the fall any time after the first frost or freeze that kills the tops. Be careful to not cut, break or mutilate the roots in any way. Much broken root will reduce the price of a bunch of roots that would otherwise be prime stock.

All particles of soil should be washed from the root being careful not to break the bark. Prices for the past ten years have ranged from $4.50 to $10.00 per lb., some choice lots, large roots and select forms, have sold as high as $12.00 in the New York markets. Prices at present are as follows:

Good cultivated	$7.00 per lb.
Medium	6.50 per lb.
Choice wild	7.50 per lb.
Medium	7.00 per lb.

other according to grade. The above prices are for dried root.

My garden No. 1, which is 48 by 56 feet produced $1,316.85 worth of stock in 1909.

EXPERIMENT STATION WORK. a.

United States Department of Agriculture, Farmers' Bulletin 360.

DISTANCE BETWEEN CORN HILLS.*

The distance at which corn is planted in check rows has been decreased by several inches since the first machine planters were put upon the market. It has evidently been the opinion of farmers, and agricultural implement manufacturers as well, that the distances formerly used allowed more space than necessary to each hill, and that the number of hills per acre was smaller than could be produced to the best advantage. Distance experiments with corn by the experiment stations and others have been numerous and the results have varied. This would seem to indicate that distance between rows is influenced by different factors, such as soil, season, locality, variety, and that, therefore, no certain distance can be universally the best. Further light has been thrown on this subject by a series of tests conducted from 1903 to 1907 by the Illinois Experiment Station in different sections and on different soils in Illinois. The purpose of this work was to determine the distance at which check rows of corn returned the highest and most profitable yields, and whether planting two kernels per hill at closer distances is better than three kernels at greater distances.

The thickness of planting was varied by increasing or decreasing the distance between rows in both directions. The hills were checked on different plats at distances ranging from 33 to 44 inches, the intermediate distances being 39.6 and 36 inches. The different series were repeated many times each year, in order to equalize differences of soil and season and to make the averages more nearly true. Variations in stand were eliminated so that all parts in the same series were comparable with each other. Attention is called to the fact that with a stand of 100 per cent, hills checked 44 inches apart with two kernels per hill, an acre produces 6,480 stalks; checked 39.6 inches apart, 8,000 stalks; 36 inches apart, 9,680 stalks; and 33 inches apart, 11,520 stalks. If three kernels instead of two are planted per hill, the number of stalks per acre for the different distances is 9,720, 12,000, 14,520 and 17,280, respectively.

The average results secured in northern Illinois showed that generally on the two-kernel, as well as on the three-kernel, plats, the average yields increased toward the thicker plantings. On the two-kernel plats the average yields for 1904 to 1907, inclusive, increased from 44.1 bushels per acre for the 44 by 44 inches, or widest planting, to 54.3 bushels for the second thickest, or 33 by 36 inch planting while where three kernels were planted per hill the widest planting produced on an average 54.1 bushels, which increased as the distance was narrowed down to 61 bushels

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a. A progress record of experimental inquiries, published without assumption of responsibility by the department for the correctness of the facts and conclusions reported by the station.

*Compiled from Illinois Station Bulletin 126.

per acre for the closest, or 33 by 33 inch planting. In central Illinois, just as in the experiments carried on in the northern part of the State, the plats planted with two kernels per hill increased in average yield from the widest planting to the second thickest, the yields being 47.7 bushels and 55 bushels per acre, respectively. The plats with three kernels in the hill ranged in average yield per acre from 46.8 bushels for the closest planting to 52.3 bushels for the 39.6 by 39.6 inch and the 36 by 44 inch distances. The plats planted 36 by 36 inches with two kernels per hill yielded 2.2 bushels per acre more than the plats planted 39.6 by 39.6 inches with three kernels per hill.

The yields in these distance experiments were regrouped to determine whether the distance of planting giving the highest yield on land producing more than 50 bushels will also give the highest yield on land producing less than 50 bushels per acre. The data from the northern fields show that the best yields were taken from the plats with three kernels per hill, and also from those on which the hills were practically 36 inches apart each way. In the central part of the State the highest average yield from land producing over 50 bushels per acre was secured by planting two kernels per hill at a distance of 33 by 36 inches. Almost the same yield was obtained where the hills were planted 39.6 inches apart each way with three kernels per hill. On land yielding less than 50 bushels per acre practically the highest average yield was secured where two kernels were planted per hill in rows 36 inches apart in each direction.

In summarizing the results it is advised that on all ordinary cornbelt land of the northern part of Illinois the hills be planted not more than 36 inches apart and with at least three kernels per hill, and that in central Illinois, on the common brown silt loam prairie lands, sufficiently productive to produce over 50 bushels per acre, corn be checked 39.6 inches apart and three kernels planted per hill, while on the common prairie land not generally producing 50 bushels per acre, as, for instance, average cornbelt land, the hills should be 36 inches apart and only two kernels planted per hill.

REPLANNING A FARM FOR PROFIT.

U. S. Department of Agriculture Farmers Bulletin, 370.

INTRODUCTION.

Habit frequently continues a type of farming in a community long after that type has become unprofitable. Wheat farming on fertile virgin soil is usually profitable, but there are many instances in the United States where farmers have continued to grow wheat for a number of years after it had ceased to be a profitable crop. The same is true of cotton. A two-year rotation of corn and oats has been continued in portions of the corn belt, notwithstanding the fact that it is often unprofitable, little or no money being made on either crop. Frequently these unprofitable types of farming continue through a series of years or until the property changes hands or new methods are introduced. The farmer finds it hard to change a lifelong habit.

DIFFICULTY OF TAKING UP A NEW LINE OF FARMING.

A man who has grown up with the agriculture of a community is slow to believe that the type of farming he has followed and which was at one time profitable has at last become unsuited to his conditions. It is no small task to think out and change his long-used type to some better kind of farming. There are several reasons why such a change is difficult. It may mean a new line of equipment. Buildings may need modification or fences must be rearranged. It may mean the introduction of commercial fertilizers or of more or different live stock on the farm. It may mean that money will have to be borrowed if the proposed changes are effected. Furthermore, the change may not succeed. At best the taking up of a new line of farming requires a readjustment of the usual ways of thinking and doing, a thing difficult in itself and requiring considerable time to accomplish.

HOW SHALL THE CHANGE BE MADE.

Notwithstanding habit may set the farmer in his ways, altered conditions and lessened yields and income may compel him to change his system or go out of business. To what shall he change? How shall he go about it? What type of farming is likely to prove more profitable than the kind he is now following? What additional capital is necessary to institute a new and better system? These are the questions that confront him. They are difficult to answer. With pencil and paper in hand he may estimate the returns that may reasonably be expected by introducing more crops that build up the land, by growing more of the crop that is bringing him in the greatest amount of money, by giving more attention to the live stock that has been found to pay best, and the like.

If in these calculations he meets with difficulty because of a lack of definite information as to what may be reasonably expected when improved methods are applied in the culture of a crop or in the handling of stock, he may write to the agricultural college, or the board of agriculture, or the agricultural experiment station of his own State, or to the United States Department of Agriculture for help. It is the business of these institutions to discover and gather facts relative to the science, practice, and business of agriculture for the benefit of the farmer, and particularly for the farmer who wants to improve his methods of farming. The agricultural press also undertakes to aid the farmers in the solution of problems of this character.

In addition to these sources a few private firms have been established whose business is to furnish expert advice on farm management for a consideration.

OBJECTIONS TO GIVING ADVICE ON THE MANAGEMENT OF ENTIRE FARMS.

Not always, however, are the institutions just mentioned prepared to give the farmer information on a plan covering his whole farm. The expert dairyman cares to give advice only on dairying, the entomologist only on insects and spraying, the agronomist only on field crops, the pathologist only on plant diseases, the shepherd only on sheep. Not many care to attempt to co-ordinate all the manifold interests of the farm into a single comprehensive farm plan, and yet this is exactly what the farmer must do every day of his life if he would get the most out of his farm and make farming pay.

The farmer is not simply a corn farmer, or a wheat grower, or a cattle breeder, or a sheep feeder, or a poultry raiser, but often all of these and more combined. His farm, therefore, must be planned with reference to all of these operations and the harmonious dove-tailing together of the different parts. In replanning his farm for profit the farmer must see all these different problems in a comprehensive way at the outset, omit the features that do not pay, and strengthen those that do.

Fortunately, many of our agricultural colleges today are co-ordinating the work of their different departments and giving courses in farm management, and usually suggestions can be obtained from these sources relative to the general management of the farm—not necessarily detailed directions for farming, for it would be as difficult to tell a man how to farm as it is to tell him how to succeed in law, but rather to furnish him a comprehensive plan for managing his farm, corresponding in a way to the plan furnished by the architect to a builder.

FARM PLANS MUST BE BASED ON AVERAGE CONDITIONS.

It is often said that a farm can not be planned as other kinds of business are; that the vicissitudes of weather, the visitations of insect pests or plant diseases, the low prices that may prevail when the farmer has to sell, and other unforeseen circumstances may interefere to make all farm plans almost worthless from a practical standpoint.

This is often quite true with reference to plans made for a particular year. But when the plans are based on average conditions for a long series of years, then the objections do not hold. For while we can not tell what may happen during any particular season, we can foretell with considerable accuracy what the average conditions will be over a series, say, of ten years. The whole business of insurance is based on the reliability of averages. It can not be foretold just who out of a thousand persons will die next year, but it can be stated with much certainty about how many persons out of the thousand will die. Plans for the farm, likewise, must represent and be based on average conditions and not on single years. The farm plan must be made for a period of years and not for a single year.

HOW FARMS ARE REPLANNED BY THE OFFICE OF FARM MANAGEMENT.

The United States Department of Agriculture is in almost daily receipt of letters to the following effect: The writer owns a farm. The farms is not paying. Can the Department suggest a kind of farming that will pay?

This correspondence is usually referred to the Office of Farm Management of the Bureau of Plant Industry for reply. It is to show how the Office of Farm Management handles such problems as these, and thus to indicate to the farmer the capabilities of a farm when replanned for profit and how he may go about replanning his own farm, that this bulletin is written.

REPLANNING A FARM IN CENTRAL ILLINOIS.

For the purpose of illustration, the problem of an 80-acre farm reported to the Office of Farm Management from central Illinois may be taken. The owner stated that his farm was located on the black prairie corn land common to that section of the State, that it was valued at $150 to $175 an acre, would rent for $5 an acre cash, and that it had been cropped with corn and oats for many years until the average yields were about 35 bushels of corn per acre or 20 bushels of oats.

In 1908 the actual yields were 24 bushels of corn and 12 bushels of oats per acre. The total income of the whole farm, estimating crops at average prices, was less than $450 for the year, from which it will be readily seen that the labor and capital invested are not very handsomely rewarded. In fact, if the labor on the farm were hired the farm would be run at a considerable loss. Valuing the farm at $12,000, the interest alone at 5 per cent is $600.

This farm was chosen for illustration because it is typical of large farming areas in parts of the Middle States and because the price of the land has outgrown the system of farming in vogue.

In the future management of this farm three propositions are open to the owner: (1) Continue the old method of farming and lose money; (2) rent the land out at $5 per acre cash and permit the land to be further robbed of soil fertility and impoverished; and (3) change his plans to meet the new conditions and farm rationally and profitably.

In replanning this farm it was decided as a preliminary to make general estimates of the returns that might be expected if the farm were operated along any one of the following lines:

(1) A grain and hay farm, with a three-year rotation of corn, oats and hay.

(2) A grain and clover-seed farm, with a three-year rotation of corn, oats, and clover for seed.

(3) A grain and clover farm, with a four-year rotation of corn, corn, oats, and clover.

(4) A sheep farm.

(5) A hog farm.

(6) A dairy farm.

GENERAL CONSIDERATIONS IN REPLANNING THE FARM.

Among the first things essential to know in replanning a farm is what can reasonably be expected from the farm if properly handled. Judgment on this point will be considerably influenced by what is being done by good farmers on similar land elsewhere under like conditions.

The usual crops grown in the vicinity and the usual rotation on most of the farms of the neighorhood are corn and oats. But very little hay is raised, notwithstanding both clover and timothy do well, nor is much stock fed. Some colts are raised, but most of the grain is sold direct to the elevator.

In the early days, when the land was new, corn yielded 75 to 80 bushels per acre and oats 40 bushels, and this type of farming—corn in rotation with oats—was very profitable. At the present time on similar land and within 10 miles of the farm in question one extensive farmer has been able to maintain the average yield of both corn and oats for a period of sixteen years at 40 bushels per acre. Even on this farm scarcely 15 per cent of the area is yearly planted to clover, and no commercial fertilizer and practically no stable manure is used.

With a proper system of rotation, the introduction of clover into the farming scheme, and the use of comparatively small quantities of commercial fertilizers where barnyard manure is not available, it should be easily possible to make the average yields of corn on this farm 60 to 75 bushels per acre and of oats 40 to 45 bushels.

This estimate is based on the fact that in a thirty-year rotation experiment at the University of Illinois the yield of corn in a rotation of corn, oats, and clover has averaged 58 bushels per acre, and when treated with lime and phosphorous in addition for thirteen years the average yield of corn per acre has been 90 bushels.* Our first thought, therefore, in replanning this farm is to introduce clover into the rotation and to use some form of commercial fertilizer that will maintain the fertility of the soil and increase the yield of money crops.

SOME FUNDAMENTAL POINTS TO BE KEPT IN MIND.

In replanning a farm it is essential that a few fundamental points in farming be kept constantly in mind:

(1) The plan should provide a reasonable reward for the labor and capital invested.

(2) The fertility of the farm should be maintained or increased.

(3) The plan must be suited to the capabilities of the owner for carrying it out.

It is assumed that in order to replan a farm for profit it is necessary to consider the capabilities of the farmer to put the new plan into effect. This, in general, will render it necessary to recombine the phases of farming with which he is already familiar or to bring in new features which are not very dissimilar to the ones he is already accustomed to. That is why in plan 1 the only change made is the addition of clover to the rotation, with a little bone meal to increase the corn crop.

PLAN 1—A GRAIN AND HAY FARM.

Live Stock to be Kept.

To successfully handle an 80-acre farm of heavy soil on which corn, oats, and hay are grown, about four work animals will be needed. These may well be draft brood mares, and it may safely be assumed that each mare will produce on an average a colt every other year. To supply the family with milk and butter, about two cows will be needed. The farmer will probably raise two or three hogs for pork and will keep a few chickens. It assumed that the permanent pasture for two cows and two colts during the season, and possibly two or three hogs, depending on whether it may or may not be cheaper and less troublesome to buy pork than to put up hog fences and feed corn, together with the buildings, garden, and orchard, will require about 8 acres (ordinarily a cow requires 2 acres of pasture each season), thus leaving 72 acres of the farm which can be put into cultivated crops.

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* See Illinois Agricultural Experiment Station Bulletin 125, p. 324.

Rotation to be followed.

These 72 acres will be divided into three fields of 24 acres each without division fences, and a three-year rotation of crops will be observed as follows:

One 24-acre field will be planted with corn, using selected seed and fertilizing the field with all the barnyard manure available, and in addition applying about 400 pounds of steamed bone meal per acre. As this land still produces a luxuriant crop of clover no lime will be added at present other than that contained in the bone meal. The corn crop will be cultivated, not necessarily the regulation three times and then laid by, but as often as may be necessary to keep the upper 2 or 3 inches of soil loose, mellow and free from weeds. The corn will be planted on a clover sod which has been plowed down in the fall and left rough through the winter.

The second 24-acre field will be planted to oats, or possibly winter wheat, as winter wheat is again coming into favor with farmers in the section. The oats will be put in on corn ground which has been thoroughly disked and put into fine condition for this crop. No fertilizer will be used on the oats. Selected seed of the Swedish Select variety or of some other variety that does well in the neighborhood will be sown. With the oats and ahead of the drill a mixture of about 10 pounds of common red clover and 12 pounds of timothy will be sown.

The third 24-acre field will be in hay, the timothy and clover mixture seeded with the oats the preceding year.

Yields to be expected.

In this first replanning of the farm, then, provision has been made for a three-year rotation of corn, oats, and clover, each to occupy the same field but one year before that field is refitted for another crop in the rotation. The total average yields that may be expected from this rotation after it is put into operation are about as follows:

Corn, 24 acres, at 60 bushels per acre	bushels	1,440
Oats, 24 acres, at 40 bushels per acre	bushels	960
Hay, 24 acres, at 2 tons per acre	tons	48

Feed required for stock.—All of this produce can not be sold, however. The stock must be fed, and for this purpose it is assumed that the following quantities will be required throughout the year for the different kinds of stock:

	Pounds.
4 mares, grain fed, 15 pounds each daily	21,900
2 colts, grain fed, 1 pound each, 300 days	600
2 cows, grain fed, 4 pounds each, 180 days	1,440
Total	23,940

The figures given are averages. It is expected that the grain fed the heavy type of draft horses kept on this farm will average nearer 20 pounds during the busiest part of the working season and considerably less than 15 pounds in winter. Usually in winter, when but little farm work is going on, only one team will be fed grain. In the above estimates no account is taken of the hay fed to stock, as it is the custom in this section to use oat straw and corn stover as the only roughage either winter or summer.

If this farm were being planned for the greatest profit instead of for the purpose of showing the various ways in which the problem may be attacked, less grain and more clover hay would be fed. in fact, all the hay produced on the place would be fed to stock of some kind bought or raised for the purpose.

FINANCIAL RETURNS TO BE EXPECTED.

Since the roughage (oat straw and corn stover) fed both horses and cows is of a highly carbonaceous nature, the grain ration may well be straight oats, which is fairly rich in protein, instead of a mixture of oats and corn, which is commonly employed in the region. The 23,940 pounds of grain required to feed the stock represents about 750 bushels of oats. There will be required for seed each year also about 60 bushels of oats, making in all 810 bushels that will be consumed on the place. The remainder of the oats grown, together will all the corn, all the hay, 2 colts, and probably 2 veal calves, may be sold each year and will constitute the gross income of the farm. The gross returns may be expected to be about as follows:

Corn, 1,440 bushels, at 50 cents a bushel	$ 720
Oats, 150 bushels, at 40 cents a bushel	60
Hay, 48 tons, at $8 a ton	384
Colts, 2, at $50 each	100
Calves, 2, at $5 each	10
Total gross income	$1,274

From the $1,274 gross income should be deducted the cost of about 5 tons of steamed bone meal at $25 a ton, leaving a balance of $1,149 as the gross returns, out of which must come the expenses of labor, living, interest on investment, etc.

THE EFFECT OF ADOPTING PLAN 1.

In this first outline plan it is seen that by the introduction of hay, a large part of which is clover, into the rotation, thus augmenting the humus and nitrogen content of the soil, and by the addition of 400 pounds to the acre of steamed bone meal on each crop of corn, it may be expected that the yields will be doubled and the income raised from less than $450 to $1,149 a year, with all expense charges remaining practically the same as before, and in addition $125 paid out for steamed bone meal to help maintain the fertility of the farm. These results would not be secured the first year. The fertilized corn crop would first show the results of the system and not until the third year could the above results be expected.

The nearly 12 tons of grain fed, together with the 24 acres of oat straw and 24 acres of corn stover fed or used as bedding on the place, will make more than 100 tons of manurial material to be used on the corn. This, with the plowed-under clover stubble, will keep the farm fairly well supplied with humus. The 400 pounds of bone meal used on the corn, with that furnished by the manure, will more than supply the phosphoric acid removed by all the crops, and the only element of importance permanently decreased in the soil is potash. There is such an abundant supply of potash, however, in Illinois corn soils that this factor can probably be neglected for several generations yet.

In the above plan, should the farmer desire to feed about three hogs for pork, he should let them run on pasture, and can estimate that it will require about 15 bushels of corn each to bring them to a weight of 200 pounds at 10 months.

The income of $1,149 per annum by the system of farming outlined in plan I will pay only 5 per cent interest on a $15,000 investment and leave but $399 to pay taxes, running expenses, labor, etc., so further changes will be made as suggested in the following plan.

PLAN 2—A GRAIN AND CLOVER-SEED FARM.

In plan 1, just described, the usual system of operating the 80-acre farm was modified in only one important particular. The rotation of corn and oats was changed to a three-year rotation of corn, oats, and clover and timothy hay, and the hay was sold for $8 a ton. Instead of selling the hay, suppose only clover seed is sown—either mammoth, common red, or alsike—and the whole crop saved for seed. How would this change affect the income and fertility of the farm?

The live stock kept on the farm would be 4 brood mares, 2 cows, and 2 colts, as before. The method of feeding them would be the same. One man could do practically all the work on the farm, as before. The 400 pounds of bone meal per acre would be applied on the corn crop each year, but instead of attempting to put up or market hay, only clover seed would be sown and attention centered on the production of a heavy clover-seed crop. The rotation would be (1) corn, (2) oats, (3) clover for seed.

POSSIBILITIES OF CLOVR-SEED FARMING.

What are the possibilities of clover seed as a standard farm crop? As commonly handled—the first crop cut for hay and the second crop taken for seed—the average yields vary from a peck to occasionally 2 bushels per acre. Thus handled, clover seed is a precarious crop and there is practically no money in it. But farmers are known in Ohio and Illinois who make a business of growing clover for seed each year and who count with as much certainty on getting yields of 4 bushels of seed per acre as they do on getting 50 bushels of corn per acre each year on good corn land.

To secure seed the clover-seed farmer aims to make his clover bloom in dry weather. He reduces the quantity of stem, and instead of rank-growing plant that lodges badly he will have a short, stocky, upright clover plant. Likewise he aims to have only a medium thick stand of clover on the field when he grows it for seed, and so will use much less seed at planting time than when the crop is grown for hay. And probably most important of all, the successful clover-seed farmer will make his clover bloom at a time when the insects* which injure the seed most are for the most part undergoing their transformations in the ground.

Usually all of the results referred to are accomplished by pasturing the clover back in northern Illinois to about June 1st to 10th, or clipping the clover with the mower at about the same time and letting the clippings lie on the ground. It is not usually possible to get both a good hay crop and a good clover-seed crop the same season. Generally the hay crop must be sacrificed or cut considerably earlier than usual.

An instance is known of a 50-acre field of clover in Illinois, not far from the 80-acre farm here being considered, where haying was begun one season about ten days earlier than usual and finished about the usual time. The whole of the second crop was then saved for seed. On the part cut earliest for hay the seed obtained at the second cutting averaged close to 5 bushels per acre for common red clover. On that portion of the field cut last for hay the seed yield of the second crop was scarcely 1 bushel per acre. By cutting hay early the ravages of the clover-flower midge, which prevents clover-seed formation, were largely avoided and a good seed crop obtained.

FINANCIAL RETURNS TO BE EXPECTED.

In the second plan it is assumed that if a farmer understands his business he can get average yields of at least 3 bushels of clover seed per acre. Assuming yields of 60 bushels of corn per acre and 40 bushels of oats, as before, that the stock will require the same quantity of feed as in plan 1, and that prices will be 50 cents per bushel for corn, 40 cents for oats, and $6 for clover seed, there will be for gross income the following:

Corn, 24 acres, 1,440 bushels, at 50 cents	$ 720
Oats (feed and seed, 810 bushels), 150 bu., at 40 cents.	60
Clover seed, 24 acres, 72 bushels, at $6	432
2 colts at $50 each	100
2 calves at $5 each	10
Total income	1,322

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*What these insects are, their nature, and how to avoid them may be learned in detail by a study of Circular No. 69, of the Bureau of Entomology, United States Department of Agriculture, entitled "Some Insects Affecting the Production of Red Clover Seed."

From this gross income of $1,322 will be deducted $125 for 5 tons of bone meal, leaving $1,197 to pay for labor, interest on investment, and other charges against the farm.

The growing of the clover for seed instead of for hay is thus seen to be even more profitable than the hay proposition. The labor of harvesting the seed is much less exacting than handling the crop for hay, and if a rain or two should come after the seed crop is cut the damage is far less than in the case of the hay crop.

Besides, instead of the hay being sold, resulting in considerable loss of soil fertility to the farm, all the clover straw and chaff would be returned to the fields and the fertility of the soil maintained much more surely than by plan 1.

It is thus seen that by simply modifying the present system of corn and oat growing on this farm by the addition of clover grown for either hay or seed the gross income is more than doubled and the land greatly improved at the same time. The returns from this system of farming will just about pay 5 per cent interest on a $15,000 investment and moderate wages to one man for the year. It would not satisfy the man who had bought a farm and was trying to pay for it out of the proceeds of the farm.

PLAN 3.—A GRAIN AND CLOVER FARM.

If the crops grown on this farm and the prices received for them are examined critically, attention is attracted at once to the fact that the largest return per acre, $30, is secured from the corn crop. From the standpoint, therefore, of profit and the use of the crops here under consideration it is desirable to grow as large an acreage of corn each year as is consistent with good farming.

Some of the important factors that must be kept in mind in increasing the acreage of corn are the insects that affect the crop injuriously when grown too many season on the same field in succession, the necessity of maintaining the nitrogen and humus supply in the soil by the culture of some leguminous crop, and the supplying of adequate amounts of certain mineral fertilizers, like the phosphates, to secure maximum corn crops and insure the continued productiveness of the farm.

ROTATION TO BE ADOPTED.

A rotation which has been found satisfactory and effective in parts of the corn belt and which puts half the farm in corn each year is as follows: (1) Corn, (2) corn, (3) oats, (4) clover. This is a four-year rotation in which half the fields are in corn each year. It is true that in this rotation corn follows corn for two years, but this is not particularly objectionable on good corn ground, especially when, following corn, the field is given two years' rest from this crop and opportunity is thus afforded to free the land from the more serious pests of the corn. This is also a type of farming differing but little from that already in operation on the farm under consideration, and hence easy to adopt.

If it be assumed, as in previous plans, that 8 acres of the farm are devoted to buildings, yards, garden, orchard, and permanent pasture for the cows, colts, and calves, there will remain 72 acres to fit into this four-year rotation. These 72 acres, therefore, may be divided into four 18-acre fields and each year there will be grown (1) 18 acres of corn, (2) 18 acres of corn, (3) 18 acres of oats, and (4) 18 acres of clover. The corn will be fertilized each year with about 400 pounds of steamed bone meal per acre.

LIVE STOCK TO BE KEPT AND YIELDS TO BE EXPECTED.

As in previous plans, it is assumed that the stock kept on the farm will be 4 brood mares, 2 colts, and 2 cows. It has already been shown that to feed the fixed stock on the farm about 23,940 pounds of grain will be needed. In feeding the grain and for seed all the oats grown on the farm, about 720 bushels, will be needed, and about 45 bushels of corn in addition. The roughage and bedding for stock will consist of corn stover and oat straw. The clover may be handled either for seed or hay.

As the hay crop in the hands of the ordinary farmer is a little more certain than the seed crop, this phase will be considered in making the final calculations.

The average yield expected will be as follows:

Corn, 36 acres, at 60 bushels per acre	bushels	2,160
Oats, 18 acres, at 40 bushels per acre	bushels	720
Clover hay, 18 acres, at 2 tons per acre	tons	36

FINANCIAL RETURNS TO BE EXPECTED.

Of the oats, 40 bushels will be used for seed and all the remainder fed.

Of the 2,160 bushels of corn, all but 45 bushels will be sold. All the clover hay will be sold. The average gross returns of the farm from all sources should be about as follows for the four-year rotation:

Corn, 2,115 bushels, at 50 cents	$1,057.50
Clover hay, 36 tons, at $8	288.00
2 colts, at $50 each	100.00
2 calves, at $5 each	10.00
Total	$1,455.50

The amount of bone meal bought for the corn will be increased from 5 to 7 tons, which will cost about $175, leaving $1,280.50 as a return for the year's expenses, interest, and labor.

If the clover were harvested for seed instead of hay the returns for the clover crop would be $324 instead of $288, and in addition all the clover straw, which is worth as a fertilizer practically $8 a ton, would be left on the land as a permanent improvement instead of being sold off for hay.

The gross returns secured by thus adopting a four-year rotation instead of a three-year rotation and by increasing the acreage in corn have been increased from $130 to $160 over plan 1 and from $80 to $116 over plan 2, while as compared with the farm as at present planned the returns are

2.8 times as great. This plan yields a return of about 5 per cent on a $15,000 investment, and leaves from $530 to $566 to pay expenses, wages, etc.

To show the effect of making live stock the leading feature of the farm, plans showing the returns that may be expected by certain methods of handling different classes of stock will now be taken up.

PLAN 4.—A SHEEP FARM.

Of all the different types of agriculture, live-stock farming is the surest way known to increase yields and keep up permanently the fertility of the farm or to build up the farm after it has once been run down by years of grain, cotton, or tobacco farming. The owner of the 80-acre farm here under consideration was conscious of this fact and thought possibly he might go into some kind of stock farming. Would it pay? He liked sheep; people said there was "money in sheep." He desired that in replanning the farm its possible conversion into a sheep farm be considered. To meet this request, therefore, the farm has been planned along one of the more usual lines of sheep farming common to Illinois to see about what returns might be expected.

LIVE STOCK FARMING A COMPLEX PROBLEM.

The introduction of stock on the farm complicates matters considerably in planning a cropping system which shall fit the needs of the stock kept and in estimating expenses and returns. First of all, in the present instance, it is necessary to know how many sheep an 80-acre farm will carry. Before this question can be answered it must be known roughly how much "fixed stock," like horses and cows, will be kept on the place, since it will require a certain amount of land to grow crops for this "fixed stock," and it is only the area that is left that can be counted on for pasture and crops for the sheep. In the previous plans, where an excess of grain and roughage was grown, the acreage of crops required for the fixed stock did not necessarily enter into the problem except as regards final returns. Now, however, the number of fixed stock kept and what they eat will be a limiting factor on the number of sheep that can be kept, and must be known at the outset.

In order that the plan for the farm may in a measure comparable with the plans previously outlined it will be assumed at the outset that 4 brood mares will be kept for farm work, 2 colts raised yearly, 2 cows kept for family use, and 2 calves sold for veal.

Good sheep farming presupposes the growing of considerable clover or other leguminous hay. With clover hay for feed, an efficient ration for practically all this stock can be made, with corn as the principal grain ration. Some oats, perhaps, should be grown for the colts and cows, and some will be needed in starting lambs on grain rations, but as corn weighs more per bushel and yields more bushels per acre than oats, it is desirable to use corn instead of oats whenever possible.

FEEDING SYSTEM FOR FIXED STOCK.

The fixed stock or permanent stock on the place will be fed about as follows:

Horses.—An average each of 15 pounds of corn, 10 pounds of clover hay, and 5 to 10 pounds of cornstalks daily throughout the year.

Colts.—Run in permanent pasture; for about 300 days they will be fed an average of 1 pound of oats daily, and for 120 days of this time they will each be fed an average of 1½ pounds of clover hay a day. They will be sold before they are a year old.

Cows.—Run on permanent pasture from May 1 to October 31. From November 1 to April 30, or about 180 days, each will be fed an average of 4 pounds of corn and oats, half and half, with 5 pounds of clover hay and cornstalks or oat straw in addition.

The grain and hay required for this stock during the year will be about as shown below:

	Pounds.
Corn:	
4 horses, 15 pounds each, 365 days	21,900
2 cows, 2 pounds each, 180 days	720
Total corn	22,620
Oats:	
2 cows, 2 pounds each, 180 days	720
2 colts, 1 pound each, 300 days	600
Total oats	1,320
Hay:	
4 horses, 10 pounds each, 365 days	14,600
2 cows, 5 pounds each, 180 days	1,800
2 colts, 1½ pounds each, 120 days	360
Total hay	16,760

The above data indicate that for the fixed stock there will be required yearly 22,620 pounds of corn, 1,320 pounds of oats, and 16,760 pounds of hay.

With this type of farming, in which all of the crops grown on the farm are consumed on the farm and where clover will constitute the principal hay and pasture crop, it is assumed, as in previous plans, that the yields will be 60 bushels, or 3,360 pounds of corn; 40 bushels, or 1,280 pounds of oats; and 2 tons of clover hay per acre on the average each year.

ACREAGE REQUIRED TO SUPPORT FIXED STOCK.

With the above data in hand it is possible to determine the amount of land that will be required to support the fixed stock on the farm. This is shown in the table below:

TABLE 1.—*Acreage of corn, oats, and hay required by fixed stock.*

Kind of feed required	Total quantity required	Yield of 1 Acre	Total area of each crop required
Corn	22,620	3,360 (60 bushels)	6.73
Oats	1,320	1,280 (40 bushels)	1.03
Hay	16,760	4,000 (2 tons)	4.19
Total acreage required			11.95

This table shows that about 12 acres of the farm must be devoted to growing hay and grain for the fixed stock. If to the 12 acres of corn, oats, and hay required for the fixed stock 8 acres more are added for the buildings, orchard, garden, and permanent pasture for the cows, colts, and pigs, there will be left for sheep only 60 acres of the farm. The problem now is: How many sheep will this area support? What is the maximum number of ewes that can be maintained on this area and what are the average returns that may be expected per annum.

To answer these questions it is first necessary to find out how much land will be required to support one sheep. This, in turn, depends on what the sheep eats, and so at the outset it is found necessary to adopt a feeding system and plan of management for the flock.

FLOCK MANAGEMENT AND FEEDING SYSTEM.

Good grade Merino-Shropshire ewes will be used and pure-bred bucks of either the Shropshire, Oxford, Hampshire, or Southdown breeds. It is assumed that on the average each ewe in the flock will drop one lamb. It is planned to have the lambs dropped in February and sold the last of June or first of July, at a weight of from 40 to 50 pounds. This will avoid carrying the lambs through the hot summer months, when pastures are short, gains slow, and danger from infestation by stomach worms great. Besides the ewes will be relieved by weaning the lambs at this season of the year and more pasture will be available for grazing; hence more ewes can be kept and the ewes will be in better condition for September and October breeding.

The general scheme of feeding ewes and lambs will be about as follows:

Ewes.—The ewes will run at pasture from May 1 to November 30, and it is assumed that an acre of good clover pasture will support about 4 ewes with their lambs. From December 1 to April 30, the ewes will receive about 3 pounds of clover hay daily, and in addition during the month of February when the lambs are coming, each ewe will be fed about 1 pound of oats daily, while during March and April the same quantity of grain will be fed the ewes with the idea of thus increasing the growth of the lambs, but half the grain will be oats and the other half corn.

Lambs.—The lambs will run with the ewes up to the time they are sold, and from March 15 to June 30 will each receive daily on the average about three-eighths of a pound of corn until sold the latter part of June or early in July.

The total quantity of grain and hay that will be required for each ewe and her lamb during the year will be about as follows:

	Pounds.
Ewes:	
Hay, December 1—April 30, 151 days, fed 3 pounds daily	453
Oats, February 1-28, 28 days, fed 1 pound daily	28
Oats, March 1—April 30, 61 days, fed ½ pound daily	30.5
	58.5
Corn, March 1—April 30, 61 days, fed ½ pound daily	30.5
Lambs:	
Corn, March 15—June 30, 107 days, fed ⅜ pound daily	40.1
	70.6

ACREAGE REQUIRED TO SUPPORT EACH EWE AND HER LAMB.

As shown, each ewe and her lamb will require during the year a total of 453 pounds of hay, 58.5 pounds of oats, and 70.6 pounds of corn. In addition it has been assumed that they will also require one-fourth acre of pasture. The total area of land, then, required for each ewe and lamb for grain, hay, and pasture will be as shown in the following table:

TABLE 2.—*Acreage of corn, oats, hay, and pasture required by each ewe and her lamb during a season.*

Kind of feed required	Total quantity required	Yield of 1 Acre	Total area of each crop required
Corn	70.6	3,360 (60 bushels)	0.021
Oats	58.5	1,280 (40 bushels)	.046
Hay	453.0	4,000 (2 tons)	.113
Pasture			.250
Total acreage for each ewe and her lamb			.430

In the above table the figures showing acreage in the last column are obtained by dividing the amount of feed required for each head by the quantity that can be produced on an acre. They show that there must be grown for each ewe and her lamb 0.021 of an acre of corn, 0.046 of an acre of oats, 0.113 of an acre of hay, and 0.25 of an acre of pasture, or a total of 0.43 of an acre for a ewe and her lamb.

NUMBER OF EWES THE FARM WILL CARRY.

It has already been shown that the area required for the fixed stock, buildings permanent pasture, etc., was 20 acres, thus leaving 60 acres of the farm for sheep, and since one ewe requires but 0.43 of an acre for her support, 60 acres will carry as many ewes as 0.43 is contained in 60, or 139, leaving off the fraction. It is assumed that three bucks will be needed for a flock of ewes of this size and that the bucks will require about the same feed as the ewes. It will therefore be safe to figure on a permanent flock of about 136 ewes and 3 bucks.

ACREAGE OF CROPS TO BE GROWN FOR FEED.

In replanning this farm as a sheep farm only such crops will be grown as the sheep and other live stock require. The acreages devoted to each of the crops of hay, pasture, oats, and corn are easily determined by multiplying the amount of each crop required for one ewe and her lamb, as shown in Table 2, by the total number of mature sheep kept on the place, or 139, and adding these results to the acreages required by the fixed stock as shown in Table 1. In the following table these calculations are made:

TABLE 3.—*Acreage required for the maintenance of 139 sheep and for the fixed stock.*

Kind of Feed Required	Area required for 1 sheep	Area required for whole flock	Area required for fixed stock	Total area of each crop grown
Corn	0.021	2.919	6.730	9.65
Oats	.046	6.394	1.030	7.42
Hay	.113	15.707	4.190	19.90
Pasture	.250	34.750		34.75
Total acreage required				71.72

The last column of the above table shows that to meet the requirements of the sheep and fixed stock on the farm there should be grown each year about 9½ acres of corn, 7½ acres of oats, 20 acres of hay, and 35 acres of pasture, or 72 acres in all, in addition to the 8 acres of land devoted to buildings, orchard, garden, and permanent pasture for cows and colts.

ROTATION TO BE FOLLOWED.

For all practical purposes, these 72 acres might be divided into four 18-acre fields and a four-year rotation adopted as follows: (1) Corn and oats (10 acres of corn, 8 acres of oats, and the whole field seeded to clover and timothy), (2) hay, (3) pasture, and (4) pasture. This rotation would supply each year 10 acres of corn, 8 acres of oats, 18 acres of hay, and 36 acres of pasture, which is practically what is needed by the stock kept.

This rotation calls for the seeding of clover in the corn at the last cultivation. Should the catch fail, a mixture of oats and field peas will be sown on the corn land the following spring and cut for hay. A mixture of clover and grasses should be seeded with the peas and oats to furnish pasture the following season.

Another rotation and arrangement of fields which would meet the needs of the sheep as regards crops and pasture would be as follows: (1) Nine acres of corn, (2) 9 acres of oats, (3) 9 acres of mixed clover hay, (4) 9 acres of mixed clover hay, and (5) four 9-acre fields of permanent or semipermanent pasture. The objection to this plan is the increased liability to stomach-worm diseases resulting from too long continued pasturing on the same fields.

FINANCIAL RETURNS TO BE EXPECTED.

Having planned this farm as a sheep farm and having arranged to handle the flock by a method common on Illinois farms, the returns that may be expected from this type of farming may be considered. The sources of income and the gross returns that may be expected are about as follows:

136 lambs, at $4 each	$544.00
139 fleeces, at $1.50 each	208.50
2 colts, at $50 each	100.00
2 calves, at $5 each	10.00
Total returns	$862.50

These returns are not particularly attractive, though nearly double what the farm is now paying. They hardly pay wages and interest on the investment. Had the owner not done some such preliminary figuring as here recorded, he might have gone into the sheep business somewhat along the usual lines, as outlined above, to his considerable disappointment.

PASTURAGE RESPONSIBLE FOR LOW RETURNS.

An examination of the crop acreages required to support this flock of 139 sheep indicates the reasons for the comparatively low returns from this type of farming. Comparatively low-priced crops are grown. More than half the farm is in pasture. One-fourth of it is in hay. This is too large a proportion of high-priced land in cheap crops for profit.

There are other types of sheep farming much better adapted to this high-priced land. If a four-year rotation of corn, oats, hay, and pasture were adopted, only half the number of sheep kept, and the surplus grain and hay sold, the income would be increased from $862.50 to $1,045.

Again, if a four-year rotation of (1) corn, (2) corn, (3) oats, and (4) clover for hay were adopted, cowpeas sown in one cornfield at the time of planting, rape sown in the other at the time of laying by the corn, the first crop of clover cut for hay and the second used for pasture, and a good quality of western lambs bought in September at the average Chicago price for the past five years ($5.87) and pastured on the clover, cowpeas, rape, and standing corn, then fed clover hay and corn until Februarry and sold at the average Chicago price for the past five years ($7.44), the income from the farm after deducting the usual expenses for freight, commission, etc., would be about $2,065. This increased return is due primarily to the fact that three-fourths of the farm each year is in grain, while during the latter part of the season practically the whole farm is used for pasture. This system of sheep farming, besides taking more than $2,500 extra capital for purchase of lambs, requires executive ability of a high order. It serves, however, to bring out the value of studying carefully the type of farming one is following for profit.

PLAN 5.—A HOG FARM.

The returns that may be expected on this 80-acre farm from making hogs the main source of income and by following one of the better plans of hog raising will now be considered.

PASTURE CROPS DESIRABLE FOR HOGS.

A bushel of corn fed to hogs on a dry lot or in a pen will produce on an average 10 pounds of pork. The same corn fed in connection with bluegrass, clover, or other suitable pasture will produce 30 per cent more pork; besides the hogs will be healthier, and there will be much less danger from disease in the pastured hogs.

In replanning the 80-acre farm here under consideration as a hog farm, therefore, suitable pasture crops will be provided throughout the season. An acre of clover pasture or its equivalent should carry, when at its best, 12 to 20 hogs. In the present plan it is assumed that each brood sow on the farm will have one litter of 6 pigs a season, probably in April, and that 15 bushels of corn will carry a sow a year or produce a pig weighing 200 pounds.

CROPPING PLAN.

While a ewe and her lamb in the farm system presented in plan 4 will scarcely eat 130 pounds of grain a season, two pigs will eat 1,680 pounds of grain, or more than twelve times as much as the sheep. Sheep are primarily grass eaters. Hogs economically consume large quantities of grain. At the outset, then, it is seen that a hog farm must provide an abundance of grain, and in central Illinois that grain is corn.

In order therefore, to grow as large an area of corn as possible and still follow a rotation of crops that will not permit of corn being planted on the same field oftener than two years in succession, with two years intervening before another corn crop is planted on the same field (for reasons that have been explained in plan 3), only one-half of the farm at most can be put into corn in a four-year rotation.

If there is set aside, therefore, as in all the plans heretofore considered, about 8 acres for the house, barn, orchard, garden, and permanent pasture for the cows, calves, and colts, there will remain 72 acres on which to grow crops for the fixed stock and the hogs.

This area may be divided into four fields of 18 acres each and a rotation followed of (1) corn, (2) corn, (3) oats, and (4) clover, exactly as discussed in plan 3. The important difference in the two plans is that instead of selling off the corn, as in plan 3, it will be fed on the place. The grain will be made into pork and the farm built up in productiveness considerably more rapidly than where all the corn is sold.

In the management of the fields the following general plan will be followed: One field of corn will be drilled in rows instead of check-rowed, and with the corn will be planted about a peck of cowpeas. At the last cultivation of the corn a mixture of rye and rape will be sown in the corn to furnish additional green feed for the hogs in the fall. With the aid of movable fences this field of corn, cowpeas, rye and rape will be harvested by the hogs themselves, the hogs being turned into the field early in September of each year.

The following year this field of corn, enriched by the planting of cowpeas, the pasturing off of the whole field with hogs, and the plowing under of the excess stubble and straw, will again be planted to corn. The third year the field will be seeded to oats and clover and the oats cut for grain. The fourth year the field will be in clover. A part of the clover will be pastured by hogs, part will be cut for seed, and a portion of the field plowed and seeded to a mixture of sorghum and rape for midsummer pasture, as outlined in detail farther along in this bulletin.

CONDITIONS ASSUMED.

In this plan, as in the others, it is assumed, in accordance with reasons previously stated, that by the use of 400 pounds of bone meal or its equivalent per acre on the corn and the growing of clover or an equivalent legume crop on the land once every three or four years in systematic rotation, the corn yield can be made to average on the farm in question 60 bushels and oats 40 bushels per acre.

For this type of farm also, as in previous plans, about 4 work mares, 2 cows, 2 colts, 2 calves, and in addition 1 boar will be kept. The grain required for this stock will be 23,940 pounds. In order to reserve as much corn as possible for the hogs, this stock will be fed 680 bushels of oats—reserving 40 bushels for seed—which falls short 2,180 pounds of the required quantity. It will take 40 bushels of corn to make up this deficiency. In addition, 15 bushels of corn for the boar should be added.

NUMBER OF BROOD SOWS THAT CAN BE KEPT.

Thirty-six acres of corn are grown in all and only one acre of it is required for seed and for extra feed for the fixed stock. It will therefore be safe to calculate roughly on about 35 acres of corn that may be fed to hogs. But it has been assumed that each brood sow and each of her six pigs will consume on the average 15 bushels of corn; therefore the total quantity consumed by one brood sow and litter—seven pigs in all—will be 105 bushels. At 60 bushels of corn per acre, 105 bushels represents 1.75 acres of corn required for each brood sow and litter; 35 acres of corn land, then, will support 20 brood sows and their litters.

PASTURE FOR HOGS.

From the time clover pasture is ready in the spring until about June 1 the hogs will be pastured on five acres of an eighteen-acre field of clover fenced off with a temporary hog fence. Up to about June 1 the suckling pigs running with the sows do not need much pasture, and this five acres of young clover will furnish them and the sows all they will need. After removing the hogs from this five acres the clover will come on and later be cut for seed. About June 1 the hogs will all be transferred to seven acres of clover adjacent, now in prime condition for pasture, and kept on it until about July 15.

To furnish fresh, prime pasture for the hogs from about July 15, when the clover is past its prime, up to the time when the corn is ready to be hogged off, six acres of the eighteen-acre clover field will be plowed up about May 1 and planted in sorghum and rape. About July 15 the temporary fence next to this sorghum and rape pasture will be removed and the hogs given the run of the pasture they are already on and in addition the six acres of sorghum and rape. This will furnish ample green feed for the hogs until September 15, when all but the sows will be turned in on a portion of the eighteen-acre cornfield planted with peas and later sown to rye and rape.

The corn plant will have considerable feeding value for the hogs in September, but as the stalks become more woody the cowpeas, rye and rape will furnish the necessary green feed and the corn and cowpeas will furnish the grain. As the hogs clean up one portion of the cornfield the portable fence will be moved and another portion added, and by the time the entire field is cleaned up the hogs will be ready for market.

In handling the clover crop for seed it is quite desirable that the clover be pastured off until about June 1 in central Illinois. The five-acre field of clover that the hogs were pastured on earliest in the season has been handled so as to fulfill this condition, as shown in plan 2; therefore it may be cut for seed in late August. After the clover field has been cleared of the hogs which were turned into the cornfield and after the clover for seed has been harvested, the sows and boars may be given the run of the entire eighteen-acre field until cold weather or until the field is plowed in the fall for the next year's crop.

FINANCIAL RETURNS TO BE EXPECTED.

The gross returns that may be expected from the eighty-acre farm as here planned are about as follows:

120 hogs, 200 pounds each, at 5½ cents	$1,320.00
5 acres of clover seed, 15 bushels, at $6	90.00
2 colts, at $50 each	100.00
2 calves, at $5 each	10.00
Total gross returns	$1,520.00

From this total must be deducted for the first few years about $175 each year for bone meal for the corn, leaving $1,340 to pay interest on the investment, wages and expenses.

One of the interesting features of these results is that they are about $478, or 55 per cent, better than when the farm is handled in the ordinary way as a sheep farm. Another fact worth noticing is that while the returns for hogs are not much greater than where the farm is run in a similar way without hogs, all the corn is fed on the place. This practice, together with the practice of sowing cowpeas, rape and rye in the corn and pasturing it off, will tend rapidly to build up the farm, so that in time even larger yields of crops than here assumed would be easily possible.

It will also be noticed that each field has a leguminous crop on it three out of the four years over which the rotation runs, and that the field of corn that was hogged off has practically everything that was grown on the land left on it. The fertilizer bill may be reduced materially and at the same time the yields largely increased. The labor of gathering the corn is saved, and the experience of some of the most successful hog raisers demonstrates that there is not enough waste of grain in this method of harvesting to offset the wages for the necessary labor to gather the corn. Most of the labor on this farm can be performed by one man. The necessary extra equipment for hog raising on the farm is comparatively inexpensive. This type of farming is very attractive to a great many farmers because usually the hog requires less attention than most other farm animals.

For a detailed account of a successful eighty-acre hog farm in Illinois on which the annual income available for general expenses, family income, etc., was $2,284, see Farmers' Bulletin 272.

PLAN 6.—A DAIRY FARM.

GENERAL CONSIDERATIONS ON DAIRY FARMING.

With good cows and good management dairy farming is one of the most profitable types of stock farming; but with poor cows and ordinary management there is no money in dairying.

It is not profitable to pasture cows on high-priced land and sell butter for 25 cents a pound; it requires too much land for pasture, about two acres for each cow kept.

Feeding silage to dairy cows the year around has been found to be as satisfactory as regards milk yield and butter production as soiling in summer and silage in winter, and more convenient. By either of these methods many more cows can be kept on a farm of given size and more profit made than by the pasture system.

The most frequent sources of loss in the dairy business are poor cows, low crop yield, and inadequate rations. Home-grown feeds usually need to be supplemented with such feeds as cotton-seed meal, gluten feed, or oil meal in compounding rations for dairy cows which shall result in maximum milk and butter production.

With purchased feeds and the manure handled properly and put back on the land, dairy farming is one of the most certain methods known for building up a farm to a high state of productivity.

CONDITIONS ASSUMED.

It is assumed that if a man is going into dairying he will read up the business and make a thorough study of all the details of good cows, effective rations, proper herd management, suitable cropping systems, efficient methods of caring for and applying manure, and other like factors of importance. It is assumed that he will keep a herd of well-bred grade dairy cows, each of which will produce 6,000 pounds of milk or make 280 pounds of butter a year.

Since it is difficult to buy cows of this type whenever wanted, it is assumed that heifers will be raised for the purpose and that on the average there will be about one-fourth as many heifer yearlings and one-fourth as many heifer calves as there are milch cows, or in all one-half as many young stock as there are cows in the herd.

The problem is: How many cows with corresponding young stock will this farm of eighty acres support? To answer this it is first necessary to know how much fixed stock, like horses, colts, bulls, etc., will be kept and what this fixed stock, the young stock, and the dairy herd will be fed.

FIXED STOCK ON DAIRY FARM.

As in previous plans, it will be assumed that four brood mares will be kept on the place and two colts raised each season, and one bull kept for herd use.

FEEDING SYSTEM FOR STOCK.

Horses and Colts.—The horses, as heretofore, will be fed an average of 15 pounds of corn and 10 pounds of clover hay daily, with all the cornstalks they will eat throughout the year. The colts will be fed 1½ pounds of clover hay for 120 days of the year and 1 pound of oats for about 300 days.

Cows.—The daily ration for the cows will average for the year as follows: 35 pounds of corn silage, 7 pounds of clover hay, 3 pounds of corn-and-cob meal, 2 pounds of oats, and 1 pound of cottonseed meal. Corn stover in small amounts will be fed in addition.

The above combination of feeds will afford a well-balanced ration for cows giving 6,000 pounds of milk a year. All the grain will be grown on the place except the cottonseed meal, or its equivalent, which will be bought. The grain will be mixed in about the proportions above indicated.

The quantity fed to one cow at any particular time will depend on the amount of milk the cow is giving. Roughly speaking, a pound of mixed grain will be fed for every 3 or 3½ pounds of milk given. Thus, if the cow is giving 30 pounds of milk a day, 10 pounds of grain will be fed; if she gives only 15 pounds a day, then only 5 pounds will be fed. The average for the whole year for one cow will be about as shown above.

Yearlings.—The yearlings from about May 1 to October 31, 184 days, will run at pasture and will receive on the average about 4½ pounds of hay daily in addition. It is estimated that each yearling will require on the average one acre of pasture for its support. From November 1 to April 30, 181 days, the yearlings will be fed 12 pounds of silage, 10 pounds of hay and 2 pounds of corn-and-cob meal daily.

Calves.—The heifer calves that are kept will be allowed to run at pasture for about six months, or 180 days, of the year, and one-half acre of pasture will be allowed for each calf. They will be fed in addition about five pounds of hay daily throughout the year. Supplementing the hay for about three months they will receive six pounds of corn silage. One pound of corn-and-cob meal per head will be fed for about six months of each year, with a little oil meal in addition. About 2,000 pounds of skim milk will be fed each calf raised.

Bull.—The bull will be fed about 2 pounds of corn, 2 pounds of oats, a half pound of oil meal, 6 pounds of hay, and 25 pounds of silage a day.

YIELDS TO BE EXPECTED.

As in previous plans, average yields of 60 bushels of corn or 12 tons of silage, 40 bushels of oats, and 2 tons of hay per acre, when fairly started as a dairy farm, are assumed.

ACREAGE REQUIRED FOR FIXED STOCK AND FOR BUILDINGS.

The grain and hay required for the horses, colts and one bull, and the land required to grow these crops on, calculated from the feeding data and assumed yields per acre previously given, are as follows:

	Pounds.	Acres.
Corn—		
4 horses, 15 pounds, 365 days	21,900	
1 bull, 2 pounds, 365 days	730	
Total corn	22,630	or 6,735
Corn Silage—		
1 bull, 25 pounds, 365 days	9,125	or .380
Oats—		
2 colts, 1 pounds, 300 days	600	
1 bull, 2 pounds, 365 days	730	
Total oats	1,330	or 1.039
Hay—		
4 horses, 10 pounds, 365 days	14,600	
2 colts, 1½ pounds, 120 days	360	
1 bull, 6 pounds, 365 days	2,190	
Total hay	17,150	or 4.287
Total area required for fixed stock		12.441

From the above table it is seen that about 7.115 acres of corn, 1.039 acres of oats, and 4.287 acres of hay, or a total of 12.441 of land, will be required to grow crops for the fixed stock on the farm. To this must be added the land devoted to orchard, garden, buildings, and exercise lot for the cattle, or about 4 acres, making in all practically 17 acres. This, subtracted from 80 acres, leaves 63 acres on which to support the cows and young stock of the farm.

The number of stock that this area will support may next be determined.

NUMBER OF COWS AND YOUNG STOCK THAT CAN BE KEPT.

To determine how many cows and young stock can be kept on this 63 acres it is first necessary to determine how much land is required to keep one cow and one-half as much young stock.

FEED CONSUMED BY ONE COW AND CORRESPONDING YOUNG YEARLY.

Based on the rations already assumed, the quantity of feed required by one cow and corresponding young and the acreage required to grow the same on the farm are shown in the following table:

TABLE 4.—*Feed and acreage required for each cow and corresponding young.*

Kind of Feed Required	Cow.*a*	Yearlings.*b*	Calves	Total feed required	Area corresponding to total feed required.*c*
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Acres*
Corn silage	12,775	543.0	135.0	13,453.0	0.561
Corn-and-cob meal	1,095	90.5	45.0	1,230.5	.293
Oats	730			730.0	.570
Clover hay	2,555	659.5	456.3	3,670.8	.918
Cotton-seed meal	365				
Pasturage		0.25	0.125		.375
					2.717

The last column of the above table shows that the area of land required to grow the crops for the maintenance of one cow and corresponding young is 2.717 acres. Above it was shown that 63 acres of the farm are available for cows and young stock. This area will therefore support 23.2 cows.

Omitting the fraction for the sake of convenience, it may be assumed that the farm will support about 23 cows and 12 head of young stock and that it will produce all the grain and hay required for them except about 4.25 tons of cotton-seed meal or oil meal, which must be purchased at a cost of about $32 per ton, or $136.

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a The amount of each feed required for a cow per year is obtained by multiplying by 365 the average quantity of feed consumed daily.

b The quantity of feed required by the yearlings and calves corresponding to one cow will be the quantity fed, as shown in the rations assumed, multiplied by the number of days each feed is given, and the sum divided by 4, since there are only one-fourth as many yearlings and one-fourth as many calves as there are cows in the herd.

c The acreage of each crop required for one cow and corresponding young is determined by dividing the amount of feed required, as shown in column 4, by the yield per acre (as assumed). It is estimated, also, that 1 bushel of corn will produce 70 pounds of corn-and-cob meal, or 4,200 pounds per acre.

ACREAGE OF CROPS REQUIRED FOR FEED.

With the data given in the last column of Table 4, which shows the acreage of each crop grown for feed required for the support of one cow and corresponding young, it will be easy to calculate the acreage required for the whole herd. Thus, in the case of corn silage, if 0.561 acre is required for 1 cow and young, 23 cows will require 12.9 acres.

The acreage thus obtained for all the crops grown for the herd of 23 cows, as well as the acreage of the different crops required for the fixed stock on the place, as shown on above are given in the following table:

TABLE 5.—*Acreage of crops required to be grown on the farm.*

Kind of Feed Required	Acreage requir'd for each cow and corresponding young	Acreage requir-ed for herd	Acreage requir-ed for fixed stock	Total acreage to be grown
	Acres	*Acres*	*Acres*	*Acres*
Corn silage	0.561	12.90	0.38	13.28
Corn for grain	.293	6.74	6.74	13.48
Oats	.570	13.11	1.04	14.15
Clover hay	.918	21.11	4.29	25.40
Pasture	.375	8.63	....	8.63
Total acreage	....	62.49	....	74.94

From the last column in the above table it will be seen that it will be necessary to grow on the farm each year for the herd and fixed stock 13.28 acres of corn for silage and 13.48 acres of corn for grain, or 26.76 acres of corn in all, 14.15 acres of oats, 25.4 acres of clover hay, and 8.63 acres of pasture.

ROTATION TO BE FOLLOWED.

For practical purposes of rotation it may be assumed that the acreages required for the different crops in round numbers are as follows: Corn, 27 acres; oats, 15 acres; hay, 25 acres; pasture, 9 acres; total, 76 acres. While on a dairy farm, where an abundance of stable manure is available, systematic rotation is not so essential as on a grain farm, yet rotation is always good farm practice. In the present instance it will be easy to fit the crops required to a four-year-rotation. For this purpose the 76 acres may be divided into 4 fields of 19 acres each and the following cropping plan adopted on each field:

First year, 19 acres of corn, well manured.

Second year, 19 acres of oats, 4 acres cut for hay, whole field seeded down.

Third year, 19 acres of hay.

Fourth year, 19 acres—9 of pasture, 2 of hay and 8 of corn.

This scheme would require movable fencing for the 9-acre pasture.

The crops in all the fields for the entire period of the rotation would be as shown in the following diagram:

Year	Field A (19 acres).	Field B (19 acres).	Field C (19 acres).	Field D (19 acres).
First	Corn .	Oats (4 acres cut for hay).	Hay.	9 acres of pasture. 2 acres of hay. 8 acres of corn.
Second	Oats (4 acres cut for hay).	Hay.	9 acres of pasture. 2 acres of hay 8 acres of corn.	Corn.
Third	Hay.	9 acres of pasture. 2 acres of hay. 8 acres of corn.	Corn.	Oats (4 acres cut for hay).
Fourth	9 acres of pasture. 2 acres of hay. 8 acres of corn.	Corn.	Oats (4 acres cut for hay).	Hay.

FINANCIAL RETURNS TO BE EXPECTED.

The gross returns that may be expected from a dairy farm on which 23 good cows are kept may now be estimated about as follows:

280 pounds of butter from each of 23 cows, at 25 cents	$1,610
100,000 pounds of skim milk, at 20 cents per hundred-weight	200
16 calves, at $5 each	80
2 colts, at $50 each	100
Total gross income	$1,990

From this gross income must be deducted $136 for cotton-seed meal or oil meal, leaving $1,854 as a gross return for the 80-acre dairy farm.

If milk were sold instead of butter and 4 cents a quart received, the returns would be about as follows:

61,000 quarts of milk, at 4 cents	$2,440
16 calves, at $5 each	80
2 colts, at $50 each	100
Total gross income	$2,620

Deducting from this gross income $136 for concentrated feed, as before, leaves $2,484 to pay the expenses, interest, and labor of the farm. The calves that are kept will about offset the decreased value of the herd from year to year.

LABOR ITEM ON A DAIRY FARM.

While these returns for the dairy farm appear larger than for any other type of farming they are not so in reality, because it requires more labor on this type of farm than on any of the types previously considered. It will require the labor of the owner and one other man the year around, and during the growing season at least, or about seven months of the year, a second man will have to be employed. The cost of this extra labor to the owner will be at least $40 a month, including board, for each hired man, or about $760. This would reduce the gross income from the farm when butter is made from $1,854 to $1,094, and when milk is sold, from $2,484 to $1,724. At 5 cents a quart the gross income after deducting these same items would be $2,334.

INCREASED INVESTMENT NECESSARY IN DAIRY FARMING.

A further item necessary to take into consideration in the dairy type of farming is the considerable increase in investment necessary. Each cow in the herd of the character here planned for costs at least $75. The cows, with the bull and young stock, represent an investment of at least $2,000. To this must be added a suitable stable and about two 90-ton silos, which would represent an investment of at least $1,500. In addition a silage cutter, a milk separator, and other equipment would make in all an extra investment for dairy farming over the ordinary grain type of nearly $4,000. It is a system, however, in which the returns begin to come in at once and furnishes a cash income uniformly throughout the year.

INCREASED PRODUCTIVENESS OF A DAIRY FARM.

While the labor bill and the investment are necessarily considerably increased in dairy farming, there is also a compensating feature. As all the crops grown on the farm are fed on the farm and additional grain bought and fed besides, the productiveness of the farm after the system has once fairly been put in operation will tend gradually to increase. In time every acre of land on the farm ought to be capable of producing an average of 90 bushels of corn or 3 tons of hay to the acre. This would permit an increase in the size of the herd, so that the profits would increase as the plan was continued.*

SUMMARY OF RETURNS FROM DIFFERENT TYPES OF FARMING.

A brief survey may now be taken of the differences in income which may be obtained from the same farm from the six different types of farming herein outlined. In all types considered one man would be able to do practically all the work of the farm, except in rush seasons and in the case of dairy farming, and in one phase of sheep farming where two and sometimes three men would be required. Had the owner of the farm two or three sons to help him, more intensive types of farming than here outlined would have been planned.

The gross income from each of the different types of farming, after deducting the cost of fertilizers or feeding stuffs, is assembled below for comparison.

Farm as managed at present	$ 450
(1) Farm planned as a grain and hay farm, three-year rotation	1,149
(2) Farm planned as a grain and clover-seed farm	1,197

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* For a detailed account of a 15-acre dairy farm in Pennsylvania which supported 17 dairy cows and returned a gross profit of $1,775.00, see Farmers' Bulletin 242.

(3) Farm planned as a grain and hay farm, four-year rotation	1,280
(4) Farm planned as a sheep farm:	
(a) Pasture system	862
(b) Small flock	1,045
(c) Lamb feeding	2,065
(5) Farm planned as a hog and clover-seed farm	1,340
(6) Farm planned as a dairy farm:	
(a) Butter, sold at 25 cents (less extra labor)	1,094
(b) Milk, sold at 4 cents a quart (less extra labor)	1,724
(c) Milk, sold at 5 cents a quart (less extra labor)	2,334

An examination of the figures shows the returns for the different types to vary from $450 as now managed to $2,334 per annum in the case of dairy farming, indicating a wide variation in the returns possible from the same farm by different systems of farming. These data emphasize the importance of studying closely the organization of a farm and the plan on which it is operated. If a corn-an-oat rotation of crops brings in but $450 a year and by the use of clover and a little fertilizer the returns can be increased by $600 or $800 without additional machinery or hired help, then a revision of the system of farming would seem worth while. By combining some of the types here considered and by introducing other modifications the returns might be still further increased.

Generally speaking, grain farming with a rotation of crops and the intelligent use of fertilizers is about as profitable a type of farming as any of the ordinary forms of stock raising. The following facts, however, should be considered in this connection. The fertilizer bills in the grain and hay types of farming must be indefinitely continued, and as the years go by will probably have to be revised. Quite certainly lime will be needed in addition to the phosphates applied if the yields assumed are maintained. On the other hand, in the live-stock types of farming, particularly dairy farming, the fertilizer bills will grow less instead of increasing, while at the same time the land will be growing more productive, and instead of average yields of 60 bushels of corn and 2 tons of hay per acre considerably larger yields than these may be confidently expected.

PLANS GIVEN NOT MODEL PLANS.

The plans suggested in this bulletin are neither complete nor are they models to follow. Their purpose is to show primarily that the income from the same farm can be doubled, trebled, or often quadrupled by simply changing the system of farming and dropping the crops or practices that do not pay and substituting for them something that does pay.

The real purpose of the plans here made in some details is to illustrate various ways of thinking about the farm when the time comes for replanning it for profit and of ways of going at the problem of estimating the stock that can be kept and the returns that may be expected to result from the adoption of a given type of farming.

It would be easy to modify in a hundred different ways each plan given by the introduction of other crops, by varying the combinations of crops, by emphasizing the poultry industry or the orchard, by combining hogs with dairy cows, and so on. The plans given in this bulletin, however, will serve their purpose if they suggest ways of looking at the problem and estimating returns.

THE PROBLEM OF REPLANNING A FARM.

The reader who may be led by the preceding pages to replan his own farm will quickly learn how limited is the reliable available information on any given phase of farming and how necessary is a broad fund of agricultural knowledge in successfully replanning a farm.

If he relies for the purpose on what data he has accumulated on his own farm, he may be surprised to find out how limited such data are and that he may not even know how much grain and hay it takes to keep a horse or a cow a year, although he may have fed both all his life. He may not know just when or just how long a field of peas and oats planted together would be available for sheep or hog pasture. He may not know the average yields of different crops that he can grow on different fields, or how those yields might be increased by the use of a little commercial fertilizer of the right kind properly applied or by rotation of crops. He may even have to go outside of himself to establish a standard as to what good farming really is and what results ought to be obtained from good farming.

If these gaps in his knowledge be made apparent through his undertaking to replan his farm and he be led thereby to observe more closely his farm operations, as well as those of his neighbors, and to read more extensively agricultural papers, bulletins, books, and reports, one of the first aims of this paper will have been accomplished.

WHY LOW RETURNS ARE REALIZED FROM SOME FARMS.

Many a farmer fails to get adequate returns from his farm because he stays at home too closely, puts in too many hours a day following the plow, and does not often enough visit good farmers in his neighborhood or other sections of the country where good farming is done. Furthermore, a man physically exhausted from a long, hard day's work is in no condition to follow and get much out of the literature of his business as reported in farm papers, agricultural bulletins, reports, and books, and without the advantage of all the information available from every possible source he will find awkward situations when he comes to replan his farm for profit.

Success in farming calls for the very best effort in a man along all lines. That best effort is called for in replanning a farm for profit. The farmer who is dissatisfied with his income from the farm needs to think seriously as to whether or not his farm is planned right for the largest returns, remembering that good farming calls for keeping up the productiveness of the farm while getting maximum crops economically from the soil.

SUMMARY.

(1) Habit frequently continues a type of farming in a community long after that type has become unprofitable.

(2) Changes in the farm system are often deferred (1) because of lack of knowledge of how to replan the farm, (2) because of lack of funds in carrying out new plans, (3) because new fences, buildings, or equipment are called for in the new plan, and (4) because a change frequently requires a readjustment of many of the usual ways of thinking and doing.

(3) In replanning the farm, help may be obtained from visits to successful farms, from farm literature, agricultural papers, the State experiment stations, the agricultural colleges, the United States Department of Agriculture, and from agricultural experts.

(4) The farm can be as successfully planned as other businesses are, provided the plans are made to cover average conditions over a period of years.

(5) Profitable farming results from good farm plans comprehending every feature of the farm carefully co-ordinated and effectually carried out.

(6) A good farm plan provides for (1) a reasonable reward for the capital and labor invested and (2) the maintenance or increase of soil fertility, and (3) it must be within the comprehension and ability of the owner to carry out.

(7) The income from the same farm can often be doubled or trebled without increased expense by adopting a system of farming suited to the land, the locality, and the owner.

(8) The successful replanning of a farm rests on a comprehensive knowledge of agriculture gained by experience and by familiarity with what is being accomplished by others along agricultural lines, either as observed by personal visits or as recorded in the literature of agriculture.

SOIL CONSERVATION.

U. S. Department of Agriculture, Farmers Bulletin 406.

INTRODUCTION.

How to restore and maintain the productivity of the soil is the most important phase of the conservation problem. We are no longer a new nation. We have deluded ourselves with the idea that we have unbounded resources in land, in forests, in mineral wealth. We have been prodigal in the utilization of these resources. We must now pay the penalty of this prodigality. In many of our older communities soil fertility has been reduced below the point of profitable production. Nation-wide effort at the present time, through federal and state agency, is directed toward the restoration of fertility in these localities. On the prairies of the West fertility is beginning to wane. In order that our heritage in the prairie country may not follow the descent of the East and the South, it is necessary that intelligent and vigorous effort be made to farm correctly. We must cease abusing the soil. The renting of land on short leases for the purpose of growing grain for market is one of the surest means of reducing the productive power of the soil. The domestic animal, with well-managed pastures and rational systems of crop rotation, is pre-eminently adapted to the development of permanent systems of profitable farming. Landowners must realize this and must take steps to improve renting methods by stocking farms with a full complement of domestic animals, where the renter is not able to do this for himself, and by giving longer leases, whereby the renter may reap the reward of intelligent management.

DISPOSAL OF LAND BY THE GOVERNMENT.

Land owned originally by the Government has, in the main, been wisely given into the hands of millions of small owners, each of whom manages his own holdings as an independent proprietor. This method of disposing of the national domain has led to the rapid creation of well-distributed wealth. It has meant conservation by utilization on the part of a maximum number of private owners. But the very magnitude and richness of this heritage has led to such prodigality in its use that now, when the period of settlement is practically past, we find ourselves confronted with increased demands for food, which must be met by soils that have been depleted of much of their yielding power. This is an important factor in the recent increase in the cost of food.

IMPORTANCE OF CHEAP AND ABUNDANT FOOD.

The problem of cheap and abundant food is a fundamental one in all industrial development. It was the abundance and cheapness of food that made possible the marvelous progress witnessed in this country during the past century. During the last sixty years we have brought into cultivation the largest and richest body of agricultural land in the world. While this land was new and rich the production of abundant crops was accomplished at little expense and with little knowledge of the principles of conservation of soil fertility. This period of exploitive farming is now past. The cost of production is now enhanced by low yields, or the use of expensive methods of maintaining high yields. Whether the era of cheap and abundant food is past depends on our ability as a people to develop cheaper and better means of production than now prevail. We no longer have unlimited undeveloped agricultural resources. Future increase in production must come largely from better methods of farming. Whether we, as a nation, shall attain these improved methods after a long period of depression, accompanied by slow adjustment to new conditions, as has been the case in older countries, or whether we shall attack the problem resolutely and intelligently and adopt improved methods as soon as the situation demands, depends on the efficiency of those agencies that in recent years have been built up in this country with a view to meeting the problems of soil conservation and agricultural readjustment.

STEPS IN AGRICULTURAL DEVELOPMENT.

In order clearly to comprehend our present position, it is necessary to review briefly the logical steps in agricultural development. In the settlement of a new region the pioneer farmer brings with him seeds of those crops he cultivated in his former home and the live stock he deems necessary in his new situation. In a few years he has learned which of these crops are best adapted to the new environment of soil, climate, and market facilities. Then follows the rapid development of a type of farming based on one or two crops for which there is a cash market.* The new soil is rich, and for one or two generations is believed to be inexhaustible. It is therefore exploited of its fertility and a general change of system is instituted only when waning yields begin to bring failure to the less progressive element in the community. When this period is reached a new problem arises. Single-crop farming requires little capital. A dwelling, a few work stock and a modest shelter for them, a little fencing, and a moderate equipment of farm implements represent the necessary capital of the grain farmer in addition to his investment in land, and the last has usually been a gift from a generous nation.

DIFFICULTIES IN CHANGING TYPES OF FARMING.

To change to a more conservative type of farming requires large expenditures for new equipment. Money must be invested in live stock, new buildings must be erected, fences built where none were needed before, and new types of machinery must be bought. Recent studies by this Department indicate that on well-organized stock farms in the Middle West the amount invested in farm buildings, exclusive of the farm dwelling, amounts on the average to $9.27 per acre for the whole farm, while the cost of fences represents $4.60 per acre. These two items alone, therefore, represent an outlay of about $2,220 on a 160-acre farm. The major part of this expediture must be met when the farm changes from grain growing to stock farming. The investment in live stock itself on a farm represents another sum nearly as large as the above. In addition, more labor is required, and this labor must be more intelligent and more reliable Hence the change from an exploitive to a conservative type of farming is at best a gradual one, and requires unusual resourcefulness on the part of the farming population.

EXPLOITIVE FARMING TOO LONG CONTINUED.

It is not strange, therefore, that in many communities exploitve farming continues beyond its legitimate life. In fact, such a change could hardly proceed in the older settled states while the unbounded West offered the renter and the farm laborer the opportunity to acquire a home by gift from the Government, on soil fertile enough to permit, for one or two generations, profitable farming with little equipment other than energy and courage. At the same time the nation as a whole did not suffer from the depletion of the soil in the older states, for the reason that increased production on the rich soils newly brought under cultivation in the West kept pace with the ever increasing demand for food. Hence it was that the decrease in the agricultural population and the abandonment of a large part of the land formerly tilled in the Eastern States attracted little attention. Agricultural economists looked with complaisance on the decrease in rural population, shown in the following statistics taken from recent census reports:

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*In regions where transportation facilities are not favorable some form of livestock farming is usually followed until transportation lines are open, but in new regions the manure from the stock is ordinarily not made use of, so that the keeping of the live stock is of no importance from the standpoint of the maintenance of soil fertility. Where transportation facilities are available, the development of an exploitive type of grain farming is coincident with settlement.

DECREASE IN POPULATION AND ABANDONMENT OF LAND IN THE OLDER STATES.

Gain or loss in population, 1890-1900.

State	Rural *a* (loss)	Urban (gain)
	Per Cent	*Per Cent*
Maine	8.46	40
New Hampshire	8.26	49
Vermont	12.30	59
Connecticut	12.30	60
New York	11.30	35
New Jersey	11.90	53.5
Delaware	3.13	20.4
Ohio	4.55	30.8

Similarly, a decrease of 38.1 per cent in the area of improved farm land in the six New England States between 1880 and 1900 was not regarded as a calamity, but as a natural consequence of the opening up of richer and more easily tilled lands in the West, and the development of transportation facilities between the grain fields of the West and the cities of the East. In many of the older States a similar abandonment of land has occurred that is not shown by statistics. In most of these States the area of improved land is only 25 per cent to 40 per cent of the total area. New land has been cleared as old land was abandoned. A conservative system of agriculture would have kept the older lands in cultivation.

THE PRESENT SITUATION.

We are now confronted by a new situation. The bringing into cultivation of new land in the West no longer meets the loss due to abandonment of older lands in the East, combined with the increased demand for farm products. Our people, instead of remaining at home and building up impoverished farms, still continue to migrate in search of virgin lands. The stream of migration which has flowed westward since settlement began on the Atlantic coast is now being deflected southward and northward. During the past six years an average of 54,000 American citi-

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a Inhabitants not living in incorporated towns or cities.

zens, have annually crossed over into Canada in the hope of finding new land that would bring rich returns from exploitive farming. A countercurrent of migration is even setting in from the West toward the East. A good many western farmers are selling their lands at high prices and moving to the cheaper lands on the Atlantic seaboard. Tension is felt on all sides. The exhaustion of free lands has increased the price of land all over the country. The rising price of land makes it more difficult for the young man with slender capital to acquire a home on the land; hence there is an increase in tenant farming. The situation is intensified by the prevailing unsatisfactory system of renting land. Leases are usually made for short terms. The renter has no interest in maintaining the fertility, for he has no assurance that he will receive the benefit of it. He is interested only in immediate results. He therefore proceeds to rob the soil by exploitive methods of farming similar to those which prevailed when the land was first put into cultivation. As an indication of the prevalence of short-term leases an illustration may be taken from a single county in the State of Ohio. An enterprising newspaper published in this county makes a specialty of securing data concerning the number of tenants moving from one farm to another. In the spring of 1909 the announcement of such removals occupied a full page of very condensed reading matter in this newspaper. The paper states that it is the custom in the county for renters to remain only one year on the farm. Continuation of this custom means the ultimate ruin of both land owner and renter.

From what has been stated above it is not surprising that the values of farm products have risen to a marked degree in the past few years. This has affected other industries. City people are beginning to turn toward the land. This department receives many hundreds of letters annually from people employed in manufacturing, mercantile, and transportation industries asking for information that will enable them to become farmers.

Not only has the value of farm products increased, but exports, especially of breadstuffs, have fallen off in a marked degree. Comparing the five-year period ending in 1903 with that ending in 1908, the exports of corn and its products decreased from 135 million bushels to 82 million bushels, a decrease of 39 per cent. During the same time the exports of wheat decreased from 212 million to 114 million bushels, a decrease of 46 per cent. If America is to retain the favorable balance of trade which has characterized the past quarter of a century, it must be done not by increase in acreage, as in the past, but by increase in yields per acre. We no longer have unlimited areas of virgin soil to exploit. The question whether we shall be able to meet the increased demands for food and clothing by increasing the yields is a pertinent one. In this connection the following statistics are of interest.

CONDITIONS IN OLDER COUNTRIES.

Average yields, 1901 to 1905, inclusive, in bushels per acre.

Crop	Germany	France	Great Britian	Bulgium	United States
Wheat	28.2	20.2	31.7	34	13.8
Rye	24.9	16.8	----------	34	14.8
Barley	34.3	24.0	34.3	46.5	27.0
Oats	41.1	32.0	44.7	64.7	30.9
Corn	----------	----------	----------	----------	24.9

These figures show that in the older countries of Europe, where farming has been followed for many centuries, the problem of satisfactory yields of farm crops has been solved. The agriculture of Germany is more nearly similar to that of the United States than that of any other of the countries mentioned in the above table. It will be noted that the yield per acre of wheat in Germany is more than twice that in the United States, the yield of rye nearly twice as large; the yield of barley nearly a third larger; and the yield of oats more than one-third larger. It will be interesting to know how the German farmer maintains these yields. The following statistics give us some information on this point:

Comparative area of different classes of crops in Germany and the United States.

Classes of Crops	Germany	United States
	Per Cent	*Per Cent*
Cereals	52.0	64.0
Hay and forage	[s]31.4	[s]21.3
Roots	13.8	1.3
Fibers	.8	9.1
Vegetables and fruits	2.0	3.2
Miscellaneous	----------	1.1

It will be noticed that the proportionate area of cereals grown in Germany is about one-fifth less than in the United States, while the proportionate area of hay and forage crops is one-half greater. In addition to that the percentage of the total area which is planted to root crops is enormously greater in Germany than in the United States. These root crops consist largely of potatoes and sugar beets, and the best German authorities estimate that at least one-third of the products of the area of these two crops is available for stock feed. They also estimate that one-third of the products of the area devoted to cereals is devoted to the feeding of domestic animals. Germany, therefore, devotes very much more of her soil to the production of feed for live stock than does the United States.

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[s] Permanent pasture lands not included, as this item is not available for the United States.

The larger proportion of land devoted to raising feed for live stock permits more stock to be kept, as shown in the following figures:

Numbers of the principal kinds of live stock maintained per 100 acres of land on farms in Germany and the United States.

Live Stock	United States	Germany	Difference
Cattle	16.3	29.1	78
Horses	4.4	6.4	45
Swine	15.1	25.8	71
Sheep and goats	15.3	19.9	30

Thus, on the same area of farm land, the German farmer maintains on the average from 30 to 78 per cent more live stock than does the American farmer. The manure from these animals is also better cared for in all European countries than it is in this country. Not only that, the United States exports vast quantities of cotton-seed meal, linseed-oil meal, and other rich nitrogenous feeding stuffs, while Germany imports vast quantities of these materials. German farmers not only conserve their own natural resources but they draw on other parts of the world to maintain the fertility of their lands. America has been mining her soil and shipping the products to Europe. In addition to the sources of fertility above given, Germany uses annually on her soil 550,000 tons of nitrate of soda, 275,000 tons of sulphate of ammonia, 1,200,000 tons of superphosphate, and 1,400,000 tons of basic slag, in addition to large amounts of potash salts.

Conditions similar to those in Germany are found in England, Belgium, and France. The farmers of these countries, by necessity, have worked out the problem of profitable conservative farming, and especially have they learned the value of domestic animals as a means of conserving fertility. We are now confronted by the same necessities that compelled the adoption of sound systems of agriculture in the Old World. How shall we meet this problem?

THE SOLUTION OF THE PROBLEM.

In the first place, we must increase the number of domestic animals on our farms. Where land is farmed by renters the leases must be made for longer terms, and where the renter has not the capital to provide the proper number of domestic animals these must be supplied by the landowner. We must give more attention to the condition of our pastures. In some parts of this country pastures have been overgrazed until they are nearly worthless. This is especially true in some regions where dairy farming is prominent. Cows are turned on to pastures too early, and the grass is given no chance to make the necessary growth to maintain vitality. Pastures which formerly supported one animal on 2 acres now support only one on 10 acres. This is not universally true, but it is true in large areas. The ranges of the West have been depleted by overpasturing, and in addition are now being settled by farmers, so that the range area is decreasing. There is a serious shortage of live stock in that section, and this shortage must be met by raising more young stock on the farms of the East.

EFFECT OF LIVE STOCK ON SOIL FERTILITY.

The effect of live stock on the fertility of the soil needs no demonstration. It is well known to every intelligent farmer. Up to the present time, at least, no system of agriculture has been permanently profitable without the use of domestic animals as a means of maintaining the productiveness of the soil. Whether such systems are possible remains to be seen. It may be that the use of legumes and other crops producing humus, combined with the judicious use of commercial fertilizers, may serve to maintain high yields, but the supply of commercial fertilizers is not unlimited, and ultimately these soil amendments will have to be dispensed with.

EFFECT OF LEGUMES.

In addition to increasing the number of domestic animals on American farms, our farmers must pay more attention to leguminous crops and to other crops which provide a supply of humus for the soil. Legumes, such as clover, peas, alfalfa, etc., are especially important because of the fact that with the aid of certain soil bacteria they are able to draw their supply of nitrogen from the air. Having thus an unlimited supply of this valuable plant-food constituent, they become very rich in nitrogen. The stubble and roots of a leguminous crop frequently leave in the soil sufficient nitrogen for the need of the crop that follows. Recent investigations by this Department in Kansas and Nebraska show that the average increase in the yield of corn grown after alfalfa, compared with corn grown after nonleguminous crops, is 75 per cent. A good crop of clover has a similar effect on the yield of crops which follow it. Instances are known where the practice of sowing bur clover in cotton fields in the fall of the year and turning it under in spring in time for another crop of cotton has, in three years, doubled the yield of cotton. Crimson clover sown in a similar manner between crops of corn has, in a few years, increased the yield of corn 50 per cent or more.

The reason these leguminous crops have such a marked effect on fertility in many cases on depleted soils lies in the fact that nitrogen is not a constituent of the soil proper, but only of the decaying plant and animal matter in the soil. When soils are farmed for many years without any attention to their fertility this organic matter is rotted out and the nitrogen disappears. Hence nitrogen is nearly always the first plant-food constituent to become deficient in the soil.

The fact has already been referred to that we export a large proportion of our cotton-seed meal, oil meal, and other rich nitrogenous feeding stuffs. In 1908 we exported linseed-oil meal to the amount of 696 million pounds, cotton-seed meal 929 million pounds, and corn-oil cake 66 million pounds. These materials are all exceedingly rich in nitrogen. They should be kept at home, fed to live stock, and the manure returned to the land.

DEPENDENCE ON OUR OWN RESOURCES.

There is this difference between our situation and that of the older countries of Europe: Hitherto we have been exporters of our feed stuffs rich in fertilizer constituents, while they have been importers. They have been drawing on the newly settled regions of the world for materials with which to feed their crops. Now that we have reached the period where we need to do the same thing, there are no great areas of virgin soil from which we can draw such supplies. Indeed, it seems that the countries of Europe will not always be able to draw on supplies of this character from other parts of the world, because they will soon be needed in the regions where they are produced. The American farmer can therefore not hope at least in the near future, to import feeding stuffs with a view to enriching his land, but he will be making a long step forward when he quits exporting these materials and returns them to his own soil. Whatever shortages there may be must be made up by the intelligent use of commercial fertilizers. There is no danger of a nitrogen famine. We can grow leguminous crops to supply nitrogen. We can also, by judicious use of the refuse from grain and other crops and by the use of intelligently planned crop rotations with occasional catch crops for green manure, keep up an abundant supply of humus. Even if we had no other resources for maintaining the fertility of the soil than leguminous plants and humus-making crops we could, on much of the land in this country, maintain a much higher standard of yields than obtains at the present time.

EXAMPLES OF SUCCESSFUL FARMING.

Many examples could be given of remarkable results accomplished on American farms by the introduction of improved methods of soil management. A few instances will suffice. In New York State there are large areas of lands which formerly produced satisfactory crops, but which in recent years have been reduced in fertility to the point where their cultivation is no longer profitable by the methods in vogue in that section. Two years ago a representative of this Department induced a farmer in that section to grow 4 acres of potatoes under his direction. This farmer had been growing potatoes for many years, using seed which had been grown for sixty years in that locality without selection to maintain its quality. His ordinary yields of potatoes were about 40 bushels per acre. He was induced to secure new and improved seed and to cultivate in the most thorough manner. As a result, these 4 acres produced a yield of 250 bushels of potatoes per acre. Similar results have since been secured by a number of other farmers in the same locality.

An Illinois farmer a good many years ago established on his farm a rotation of corn, corn, oats, clover. The corn and oats were fed to hogs, which were allowed to graze on the clover. Very little feed was purchased, but everything raised on the farm was converted into manure and returned to the land. At the beginning of this system of farming the yield of corn was about 35 bushels to the acre. Ten years later it had risen to 80 bushels per acre, the average yield for four consecutive years being 80.4 bushels per acre.

A Missouri farm, which had been devoted to corn and wheat for seventy years, and on which the yields of wheat were about 8 bushels per acre and corn about 25 bushels, was subjected to a system of farming similar to that just described for an Illinois farm. In six years the yields of this farm were more than doubled.

The work of the Farmers' Co-operative Demonstration Office of this Department shows that by the utilization of resources a the command of every farmer enormous increases can be made in the yield of crops. In this work the following points are emphasized:

1. Deep fall preparation of the soil.
2. Planting of well-selected seed.
3. Mainly shallow and frequent cultivation of the crop during the growing season and especially after a rain.
4. The judicious use of commercial fertilizers and the increased use of home-produced fertilizers and the growing of leguminous crops.

During the year 1909, 509 farmers in the State of Alabama, working under the direction of representatives of this Department, raised 1,235 demonstration acres of corn. The average yield was 33 1-4 bushels per acre, while the average yield for the State, as shown by the figures of the Bureau of Statistics of this Department, was 13 1-2 bushels.

In the State of South Carolina 658 farmers grew 2,718 acres of cotton in the demonstration plats. The average yield was 1,205 pounds of seed cotton per acre. In the same State 537 farmers grew 1,636 acres of corn in the demonstration plats. The average yield was 36.1 bushels per acre, compared with an average yield for the whole State of 16.7 bushels.

In both these States the yield of corn on the demonstration plats is seen to have been more than twice the average yield for the State. The average yield of cotton for the State of South Carolina for 1909 is not available, but it is certain that the yield of cotton on the demonstration plats is at least 50 per cent greater than the average for the State. These yields were made by methods which any farmer in the South can use.

CONCLUSIONS.

These facts show that the main work to be done for soil conservation in this country is that of teaching the farmer how to utilize the resources at his command. The methods to be pursued are, in the main, understood by leading agriculturalists and progressive farmers all over the country, but they are not understood by the great majority of farmers. The latter must be taught by precept and example. It will take time to bring about the necessary change.

The methods necessary in bringing about these changes are, first, to determine what types of farming are best adapted to the conditions prevailing in the different sections of the country, and, second, to help the farming population to readjust itself to these conditions. This readjustment is an expensive process to the farmer—new equipment must be earned and more labor must become available. Not only must the farmer be taught the principles of soil management, but he must be taught how to take better care of his animals and how to breed a better class of animals. National and state agencies are now co-operating in this work of teaching the farmer improved methods.

Present conditions in America are merely an incident in the development of a new agricultural region. Now that the period of settlement and exploitation of the soil is passed, we are under the necessity of developing systems of farming suited to the individual soils in order to develop their highest efficiency and to make the most of their fertility. Where the last has been impaired, the systems must be adjusted to obtain the restoration of the highest possible productivity under economic limitations, while keeping in view the best uses of the soil when the fertility has again reached its maximum. In this readjustment we shall have to draw on the results of scientific investigation and on the experience of older nations. Many of our own farmers have successfully met these great problems, and their experience now becomes a source of valuable information to others. Fortunately our people are intelligent and aggressive, and there is every reason to believe that they are capable of meeting the emergency which now confronts us.

FARM TILE DRAINAGE.

BY DANIEL W. STOOKEY.

(Address delivered before Linn County Farmers' Institute.)

In these days of high priced land and high prices of farm products owners cannot afford to let wet land lie idle. Many keep their wet land in wild grass and think they are doing well enough. This method of farming is about as shiftless as that told of the southern negro cotton grower. The credit system prevails in the southern states. The free Negro rents a piece of ground. The merchant takes a lien on the crop and trusts the darkey for his living while he makes his crop. When the cotton is ripe the darkey asks his creditor saying, "Boss, how much I owes you?" The merchant looks over the charges which he has made as large as his conscience will permit and tells the Negro, so many bales of cotton. The Negro picks and brings in the required amount and balances the account. If there is more cotton in the field he leaves it there as he has paid his debt and does not need it. He feels that he has done well enough.

The wet land is the richest on the farm and if tiled will raise the best crops. The first crop often pays all the cost of tiling. Two or three crops always pay it all. That is, tile drainage pays from 33 and 50 to 100 per cent on the cost of the first year and repeat every year afterwards without additional expense. Do we realize what this means? Capitalists seem satisfied with investments in bank deposits, mortgage loans, stocks and bonds that pay from two to eight per cent per annum. The farmer hesitates and has hesitated for over twenty years, to my personal knowledge and sorrow, to invest in tile drainage that will surely pay from 33 to 100 per cent. Why does he hesitate? Because he has not the cash necessary and is afraid of debt and a mortgage, or is busy building a big red barn or because he is trying to get rich by selling cream from cows that he expects to give him lots of rich, sweet cream from coarse sour grass grown on slough pastures, or because he hopes that next season will be dry and give him a good crop. He takes his chances and gambles on the weather and loses, for wet land never will raise good crops unless tiled. He shrinks from a 6 per cent mortgage and loses a crop worth from 33 to 100 per cent. Mortgages placed on rich wet land have nothing horrible about them. They can easily be tiled off.

SOURCES OF WATER.

1st. From rain falling on the field. This is beneficial in watering the soil.

2d. Spring or seep water. This is injurious and should be kept far below the surface by tile drains.

3d. Surface water running on from land above.

LANDS NEEDING DRAINAGE.

Lands needing drainage show their need by signs that can easily be read. Of these signs may be mentioned: Standing water on the surface. Water under but near the surface as shown in post holes, crawfish holes and test holes that may be put down. Boggy places with tussocks of grass and holes and bumps made by tramping of stock. Slough grass, especially in meadows and pastures, where slough grass comes in and tame grass dies out. Wet strips in plowed land when all should be dry and of nearly the same color; these are probably kept wet by spring places below the surface. Mossy and mouldy appearance of the ground. Heaving and freezing out of tame grasses, clover and winter wheat. Land that turns up stiff and slick when plowed and dries out hard and cloddy. Wide cracks in the soil when dry result from the pasting together of the soil when too wet. Feeble, yellow stunted crops that were prevented by wet subsoil in their early growth from taking deep root to find moisture sufficient to withstand the sun's heat in time of drouth.

LAYING OUT THE DRAINS.

Before beginning the work it is well to prepare plans for complete drainage of the whole field. Much imperfect drainage has been done and poor returns realized by beginning without having plans for future work. With these plans the work can be done, a part at a time as is convenient. Begin at the outlet, which of course should be at the lowest place, and look the whole field over. Set a long stake at each turn and where each branch line is to join the main. Go over the lines again and make such changes as will improve the plan. Make all lines as straight as can be to keep them in the places needing drainage. The source of the water as well as the amount must be taken into consideration. Not only the shape of the surface but the nature of the subsoil must be studied. Springy places with tight clay subsoils must be treated differently from places having porous subsoil. In draining springy hillsides it is best to lay the lines on the sides of the slough well up the hillsides to catch the water before it comes near the surface. After all the lines have been located the size of tile, the fall and depth may be determined.

LEVELING.

If leveling is done by an engineer before the work begins the fall and depth of the tile at every place in the field can be known. On level land this is necessary so that mains may be laid deep enough to reach all branches that may reach back to low places or ponds in the field. Many ditchers claim that they can tell by the eye how deep to dig and how much fall to give. Surrounding groves, hills and low land confuse the eye. It is better to pay for an engineer than to spoil a drain. Some places have little or no fall while sometimes there is a drop backward into a basin. By leveling the fall may be distributed thoroughout the line and the depth at each stake known before any digging is done.

THE OUTLET.

Of course the outlet should be located at the lowest place in the system. The water should flow freely away from the outlet so that the water in the tile will not be held back. Sometimes it is necessary to go some distance below the place chosen for the outlet of the tile and deepen the channel or dig an open ditch back to the outlet. This open ditch should be from three to five times as wide as deep with sloping sides. If the sides can be set to grass they will not be apt to wash or cave. A watchful care should be exercised and the open ditch kept free from weeds and all other obstructions. The outlet should be protected from caving and tramping of stock. When possible it is well to have the outlet open from a bank and this bank should be held around and above and below the outlet by an abutment of concrete or stones. There should be as few outlets as possible as there will be less to care for. Adjacent land owners can often get good outlets by uniting and laying large tile in the natural channels. In some places outlets can be made by draining into wells that reach to gravel beds or crevices in the rock below.

THE MAINS.

In general the main should follow the lowest part of the system so that the branches will readily drain into it. As the branches seldom if ever all run full at once, but simply gather the water, it is not necessary to make the main as large as the total capacity of all the branches. If the main is too small the branches will bring water faster than the main can carry it on, and it will be crowded full and water will be forced out of the joints and into the soil where it must run over the surface or wait until the main can take it away. In places where there is danger of washing, it is well to lay the main a little to one side to prevent uncovering the tile by washing. In wide sloughs it is often better to carry the water from the branches through two or more smaller mains laid some distance apart rather than through one line of large tile. This plan permits the use of smaller tile in the mains and the several lines each drain a part of the slough.

THE BRANCHES.

In level lands the branches should be laid parallel so that every part of the field may be drained and no part doubly drained by having lines too close together. This plan of laying lines equally distant apart should be followed as nearly as possible in all cases, even in lands of irregular surface. Junctions should be made with a curve so that the stream will enter the main as nearly as possible in the direction of the flow in the main.

DISTANCE APART.

In tight soils drains should be located nearer together than in loose soils. The general practice in this section is from four to six rods apart. It will sometimes be found necessary to place them nearer in springy sloughs requiring a line on each side and sometimes a third in the middle.

FALL.

The amount of fall required is much less than some would suppose. The fall is determined by the depth of the outlet, the depth wanted at any particular place up the line, and the general lay of the land. The Illinois river only has a fall of 27 feet in a distance of 220 miles, less than 1½ inches per mile.

DEPTH.

A drain can only take water as deep as it is dug. Tile do not draw water but simply furnish a hole for it to run through. Deep drains give deep porous soil to hold the water from heavy rains. This mellow soil will hold an ordinary rainfall below the surface until it can be taken away by the tile. Small tile laid deep are often better than large tile laid shallow. The deeper the drain the more soil is available for the roots. Writers cite many instances in which roots of ordinary crops sink to the depth of four to six and in some instances twelve to fourteen feet. This shows that roots will go deep into the soil in search of food. In deep soils the lower parts can only be used by the crops when they are free from standing water. This is certainly a strong argument in favor of deep drainage. Deep soils with shallow drains only give a portion of their wealth to the crops. Many have hesitated to lay deep drains into stiff clays for two reasons. They feared the water would not sink and drain off quickly after rains, and they thought the lower soil was of little value. In both they were mistaken. After the water has drained out the air enters and the subsoil slacks and becomes mellow. Roots work their way downward and decay and together with the influence of the air they change the subsoil and it soon becomes very much like the surface. Emerson truly said that "There are farms underneath our farms that we know not of until we under drain." The worst mistake we have made is that we have not laid our drains deep enough.

OPEN DITCHES OPEN TO OBJECTIONS.

They carry off surface wash and fertility. They are in the way in cultivating, often cutting the field into small irregular patches and making short and point rows. They are liable to become obstructed with weeds or to wash out gullies if there is much fall. They occupy valuable ground and necessitate turn rows on each side that might be utilized to grow crops. They are expensive to keep in repair. Weeds grow on their sides and they carry burrs and weed seeds from place to place. Wherever possible large tile should be used to take their places. It is often better to lay the line of tile a little to one side of the open ditch so that the loose dirt will not be washed from over the tile.

Large open ditches that have been tiled should never be entirely filled but should be left shallow and made five times as wide as deep. This provides for carrying the water during floods when the tile would be too small and in the spring when the ground is frozen and prevents the water from sinking to the tile. They can then be cultivated over or better, seeded down and mowed.

THE WORK.

The most of the tile ditches are dug by hand but it is often hard to find competent men when wanted to do the work. The conditions of soil are so varied that a machine that does good work in one place might fail in another. A machine that is adapted to all kinds of soil and sub-soil and that will cut trenches of varying width and depth is necessarily complicated and expensive. Probably the simplest machine is the ditching plow drawn by horses. This simply loosens the earth so that it can easily be shoveled out by hand. This is to be recommended for small jobs. Steam and gasoline machines are in us and giving excellent satisfaction where extensive work is required and the job is large enough to warrant the use of an expensive outfit. There is a traction machine operated by a 60-horse power engine with a capacity ranging from 12 to 42 inches wide and up to 12 feet deep. This machine digs from 25 to 200 feet per hour. It is especially designed to work in wet places and is fitted with what is known as the caterpillar construction which prevents sinking in wet ground. The outfit complete weighs about 40,000 pounds. It works satisfactorily in the stickiest kind of gumbo, in clay and sandy soil. Tile up to 12 inches are laid automatically, and tile from 14 to 30 inches are laid by hand; man and tile are protected by steel curbing that is pulled along by the traction. One of the machines dug a clean ditch 24 to 42 inches wide and in places 12 feet deep at the rate of one foot per minute. The work tested to perfection with the survey.

GRADING BOTTOM AND LAYING TILE.

The bottom of the ditch must be cut to the proper grade and the tile carefully laid. The whole expense has been made to get a system of drains that will carry the surplus water away. Good tile may be bought and hauled to the field, a complete survey made and digging paid for at a fair price but all this will do no good and will be lost unless the tile are carefully laid to the proper depth and grade.

Water runs through tile drains by gravity and not under pressure as in a city water main or fire hose. It will not run up hill, climb grades nor push its way through mud settled in low places in the tile. It is hidden under ground and bad places cannot be seen like holes in the fence, cannot be inspected after the ditches are filled and therefore the landowner should know for himself that the work is properly done before any dirt is put on the tile. The bottom must be graded with no low places where water will stand. The water must run freely at every place. This is of vital importance and must not be neglected.

There are several ways in which the bottom can be properly graded. The best way is to have water running in the ditch. See that it does not stand in low places or ripple over high places. If there is no water in the ditch it will pay to haul in a few barrels and pour it in at the upper end and see that it runs through. If the soil is too loose and the water sinks away without running through, the method of stretching a line from stake to stake over the ditch and parallel to the tile and measuring down at short intervals along the line. The use of a straight edge and carpenter's level are not accurate enough for field work. The tile should be laid end to end as close as possible and bumped up tight together. The water will find plenty of places to enter.

Where there is danger of caving the ditcher may lay the tile as fast as the ditch is finished, but no dirt put on the tile until they are inspected. Insist upon seeing all the tile after they are laid and before they are covered. If the ditcher is doing honest work he is willing to be watched.

ROAD DRAINAGE.

In our prairie states we are not rich enough to bear the expense of hard roads. When dry, our dirt roads are the best on earth, and when wet they are the worst. The solution of our road problem therefore is to keep them dry. This may be reasonably well done by two systems of drainage—one to remove the water from the surface, and the other to remove the water from under the road bed.

The best improvement of our highways will combine three essential features, which are:

First. A road embankment high enough to be above overflow and sufficiently rounded to shed water readily.

Second. The road should have open ditches on both sides large enough to carry all flood water from the roadway. These surface ditches should have such a perfect grade that no water will stand along the roadway on either side.

Third. That two lines of tile drains be placed parallel with the road, one on each side between the grade and the open ditch. The tile drains should be laid three feet deep or deeper and should not be less than four-inch, and often larger, depending upon the fall, length of the line and amount of water to be carried.

DRAINAGE WARMS THE SOIL.

Observation and experiment have shown that the drained soil is, on an average, from 6 to 10 degrees warmer at seven inches below the surface than an undrained soil. If the water had been left to evaporate from the surface this heat would have been taken in changing the water into vapor. This difference in temperature represents a season in which spring comes probably two or three weeks earlier.

DRAINAGE MAKES THE SOIL MELLOW.

When the water is drained out of the soil the air enters and the ground slacks and shrinks and by chemical action with the air soon becomes mellow and porous.

DRAINAGE DEEPENS THE SOIL.

By lowering the water level and making the soil mellow the roots go deeper and the subsoil is changed and made good for the roots to seek in for nourishment.

DRAINAGE PROTECTS AGAINST DROUTH.

Some have feared that the water taken away by the tile will be needed when a dry time comes. Lands which suffer most by drouth are most benefited by drainage. The deepened soil permits the roots to go deep below the influence of the sun's rays. Mellow soil retains moisture much better than hard baked soil. This principle is the basis of the Campbell system of dry farming practiced in the arid regions of the West and Southwest, where the conservation of moisture is so essential to successful agriculture.

DRAINAGE LENGTHENS SEASON.

Drainage lengthens the season at both ends.

Tile drains work in winter and early spring and dry the soil early. It warms the soil. Planting can be done earlier. George Judd, of Springfield, Ill., who has tiled much, said: "My land is planted in corn while land across the road of the same character, but not tiled, is too wet to plow."

There is less danger from early frosts. Prof. Webber, of the Champaign (Ill.) sugar works, said that none of the cane grown on tile drained land had been the least injured by frost, while that on undrained land had been more or less damaged and some of it very badly.

DRAINAGE PREVENTS SURFACE WASHING.

Drainage prevents surface washing by taking the water away under the surface. The rain sinks readily into the soil made mellow by drainage.

INCREASES FERTILITY.

Drainage increases fertility by preventing the soil from becoming cold and sour; by admitting air and such gases as carbonic acid, nitric acid and ammonia, which aids disintegration of mineral and organic matter and fits them for plant food.

MAKES FARM WORK EASIER.

Gives a longer season in which to work. Gives long rows from fence to fence. No turning at point rows or in the mud. The mellow soil works easier. Can cultivate more regularly. Weeds are more easily destroyed. Makes the use of modern heavy farm machinery possible because of the long rows and drier ground. Heavy loads can be hauled to and from the field. Does away with open ditches and bridges in the fields. Fields are put in a cleaner and healthier condition.

IMPROVES MEADOWS AND PASTURES.

By making the soil warmer and sweeter better grasses can be grown. Coarse wild slough grasses die out. Prevents "heaving" or freezing out of tame grasses and winter wheat and rye. It does not pay any better to raise wild grasses than scrub stock.

MAKES FARMING A CERTAINTY.

Every farmer who cultivates a low, wet farm that is not tiled knows that he is gambling on the seasons, playing a game of chance with the weather, the most changeable, unreliable and irresponsible factor that we have to deal with. He begins in the spring with an if: "If I have a good season." If it rains at planting time his seed may rot in the ground. If his corn does come up it will be the little yellow where he has planted big white. If it rains at cultivating time the weeds will take his corn. Tile drainage is practically insurance of good crops. It makes the soil warm and mellow, and deep; protects against drouth; lengthens the season; prevents surface washing; increases the fertility; makes the work easier and pays better than any other investment within reach of the farmer.

SOILS AND THEIR DRAINAGE.

BY F. R. LYFORD, COUNTY SURVEYOR.

(Before Worth County Farmers' Institute.)

The soil is the farmers' business capital. He has exchanged a certain sum of money for it, or come into possession of it by inheritance, and must now look to its products for returns. The soil becomes a receptacle for his money, and a field for intelligent labor, and presents to the farmer the various problems connected with soil culture and its relations to profit and loss.

Good husbandry strenuously insists on a thorough preparation of the seed bed, and an intelligent after cultivation of the plant. It also demands a wise and economic use of the products of the soil, be they grains, forage or fruits. The end to be sought in all this is—that the farmer may receive a profit over all and still have his capital, the soil, intact and unimpaired. One of the well recognized means of bringing about this gratifying result—making the farm pay—is to remove the surplus moisture from the soil. By surplus is meant more than is needed, and the moisture should be removed through the soil rather than over it, a work remaining in an experimental stage, except as regards a better understanding of its application to various soils, and for the purpose of demonstrating the scientific changes which occur from practical work along this line. The growth of land drainage for agricultural purposes has been governed largely by the environment of the farmer. While he had sufficient land that was naturally dry and required only the ordinary and primitive methods of cultivation, there was no occasion for adding to his arable estate those lands that required more than the ordinary outlay of time and money. That time is past. Now every progressive farmer looks upon every unimproved acre of land as an item upon his expense account, for does he not pay taxes upon it in common with his most productive land? Does it not cost him as much to cultivate as does the adjoining field of rich loam? Is it not a blot upon an otherwise fair rural picture, to say nothing of the financial features which with the farmer and business man are more weighty? While this is true of the small farmer who delights in high grade and artistic farming, there are large tracts of fertile land lacking only suitable drainage to fit them for the most profitable cultivation.

The enterprising farmer, be his interests large or small, will find an ample field for the exercise of such knowledge as he may choose to acquire in the theory and practice of land drainage, nor should he fail to avail himself of all opportunities presented for mastering this useful subject. The fact that our national government and our state experiment stations are devoting much attention to such subjects as "Moisture and Crop Distribution," etc., indicates that these subjects and their bearing upon land drainage are worthy of the most careful study by progressive and practical men. In discussion of topics pertaining to general farming, fruit growing or stock raising, as given in the agricultural papers or at the session of farmers' institutes, the subject of soil drainage takes a prominent place and the value of such an improvement of the soils is emphasized, and its advantage enlarged upon by all farmers.

Like every other operation in which the management of the soil is concerned, there is a right and a wrong way; there may be a good way and a better way, but there is only one best way. Some soil requires no artificial drainage, some a little, and some a great deal in order to yield the best results. Good judgment and some knowledge are required to adapt the method of improvement to the land to be treated. The land owner should perform the work well, without unnecessary cost. He should know how the work should be done, or be able to employ someone with sufficient skill and professional honesty to do the work for him. There is no mystery connected with the theory and practice of land drainage, as some would have you believe, neither is an instinct born in men which will relieve them from the necessity of acquiring knowledge of this work in the old way. Drainage practice must be adapted to the needs of each tract of land to be improved. In other words, each farm and in many cases each field presents a special problem in drainage. The land owner must not think that a method which has proved efficient in one locality will necessarily be the best in another, or that when he has successfully drained one tract or farm he can drain any other by the same plan, yet the principles are the same for all; it is only the application of these that varies.

The profits to be derived from drainage of fertile lands are of two kinds: First, an increased yield of grases, grains or fruits which have a direct money value to the producer. Second, the increased healthfulness of the community where drainage has reclaimed all of the waste lands. The latter has a money value which is difficult to measure. The following example clearly illustrates both of the above statements: The Indiana Bureau of Statistics made an investigation of the influence of tile drainage on health and crops, selecting a single township where drainage was one of the marked improvements. Taking a period of five years before drainage began and five years after most of the township had been tile drained, it was found that the average yield of wheat in the five years before drainage was 9½ bushels per acre. This same land after drainage for five consecutive years produced an average of 19½ bushels per acre. The average yield of corn in the first five years was 31½ bushels per acre. In five years after drainage the average yield was 74½ bushels per acre. By consulting the doctors it was found that there were 1,480 cases of malarial diseases during the first five years, and only 490 cases during the second five years. With such facts before us it will require no argument to convince the average citizen that drainage has greatly increased the health and wealth of that community, and thereby added materially to the prosperity of the state.

The soil, one of the essentials to the existence and wellbeing of the human race, is one of the most complex products of nature. With all the acquirements of which man can boast, he cannot create a pound of soil, understand the intricacies of its composition, nor yet avail himself fully of the wealth locked up within this most familiar of all natural objects.

Nature has apparently brought out the choicest selections from her storehouse and placed them at the service of man in the form commonly known as soil. Its varieties are unnumbered; its capabilities are unmeasured and its adaptability to supply the wants of man only partially understood.

Soil, in general terms, is the surface stratum of the earth, that is cultivated and which produce vegetable growth.

The subsoil is the stratum of earth upon which the soil rests. The dividing line is not clearly marked as a rule, so that the terms are usually understood to apply respectively to the depth of surface land that may be cultivated, and the layer immediately below.

With respect to drainage we may speak of them as open or retentive, the terms expressing, not their power of retaining water, but the readiness or rapidity with which water moves among the particles when a means of drainage is offered.

Water, which affects the soil, exists in two conditions:

First. Hydrostatic water, which is visible to the eye and free to obey the laws of gravity, and it will pass off through drains either artificial or natural.

Second. Capillary water. This is water held within the fine pores of the soil by the surface attraction of its particles, and is commonly called moisture, and is water left in the soil after it is drained.

In general terms, about 50 per cent of the volume of a soil is empty space; that is, it contains only air and water. The results of experiment show that the volume of empty space varies from 37 per cent in sandy soils to 65 per cent in soils composed largely of clay.

How drainage operates—that is, how it effects the soil. It would be no difficult matter to collect a volume of experiments which were to ascertain the precise working of drainage.

One of the cheapest, simplest and at the same time most satisfactory experiments to determine the advantage of drainage is as follows:

Take two ordinary earthenware flower pots, the one having a hole in the bottom and the other to be without any holes in either bottom or sides. Fill both with precisely the same quantity and quality of soil, and plant in each either growing plants or seeds of any ordinary cultivated product. One will represent a drained soil, while the other represents an undrained one. Give both the same exposure and the same quantity of water.

If seeds are sown in both, those in the perforated pot will germinate the soonest and the plants become the thriftiest and hardiest. Sometimes, though seldom, the seeds in the advanced pot will not germinate at all, although they produce only sickly and slender plants. In this manner the effects of drainage can be completely demonstrated. If both flower pots are placed in earthen saucers and the water poured into the saucers, that pot having the holes in the bottom will absorb the water by capillary attraction and the plant will receive its due proportion and thrive, while the unperforated pot will not absorb any water and the plant will suffer from drought—thus showing the benefit of drainage in times of drought. A belief has obtained that drains are of advantage to the soil only when they are conducting away surplus water from showers.

It certainly is a great advantage to plants to be relieved from surplus water as soon as possible, but it is at the time no less an advantage to be supplied with new oxygen, and to have the old removed. An underdrained soil cannot make these changes in its gases, for the benefit of the plant, as well as a drained soil. This aeration of the soil is absolutely necessary for the health and growth of the plant. Plowing is nothing more or less than aerating the soil, and everyone familiar with farming operations is well aware that plants grow best on a finely pulverized soil. That is, in other words, on a well aerated soil.

Oxygen is no less essential to the roots of plants than it is to the lungs of animals, but if the oxygen is not changed, the result is very unfavorable to the plants. Every rain that falls on a porous or well drained soil brings new solvents of the inorganic materials which nourish the plants, but when it falls on an undrained soil it diminishes the amount of oxygen and produces injury to the plants, by an excessive amount of stagnant water and by lowering the temperature of the soil, for a longer period than is consistent with the health of the plant. No fear need be entertained that any clayey or loamy soil can be over-drained, or, in other words, that so much moisture may be drained out of the soils as not to leave sufficient moisture remaining for the use of any plants which may appropriately be grown in the soil. All soils have what is known as capillary attraction—that is, the power to suck up moisture and mineral matters in solution, and the finer the soil the stronger the capillary attraction.

The coarser pores of the soil can not be filled with water, unless these are impediments prohibiting the water from following its gravity thus in an arable soil only when it is resting on impervious stratum; but in a properly drained soil the water descends regularly.

Drainage removes stagnant water from the surface. On an undrained soil the water becomes stagnant because the pores are already filled with water which has no means of escape other than evaporation.

Furnish undercurrents for the water by means of drains and there is no longer any reason for the water to remain above ground, until it becomes changed from a healthful to a poisonous substance by the continued action of heat and atmospheric air upon it.

Chemists assert that fully four times the amount of heat is required to convert water into vapor that is required to bring it to the boiling from the freezing point. It is no uncommon occurrence that rain to the depth of one inch falls in the course of a shower. This amount falling on a single acre would amount to 360 hogsheads, and to evaporate this amount of water by sunshine would require an amount of heat that would convert upward of 1,500 hogsheads of water from the freezing to the boiling point. Every one must know that this evaporation is a very slow process and while it is going on the soil is kept wet and cold; that vegetation is retarded, if not entirely checked, in the early springtime.

Now, if these 1,500 hogsheads of water were carried off in drains this great amount of heat necessary to evaporate this water would be saved for the warming of the soil. Among the other advantages of drainage over evaporation may be the following:

In undrained ground the season of growth is shortened by the time occupied in evaporation.

In undrained ground the water, passing off in vapor, carries with it certain quantity of the latent heat of the earth, and this heat is in proportion to the amount of vapor formed. Thus the land is colder than it was when covered with water. In evaporation, organic mineral matters, in the form of gases, pass off with the vapor, thus leaving the ground poorer. Undrained lands suffer from hot or dry weather, though there may be water within a few inches of the surface, the ground is so compact and baked that it is not sufficiently porous to draw moisture.

In winter and spring wet land heaves under the influence of frost and heat, thus exposing such grains as have been planted, directly to the weather.

Drainage removes surplus water from under the surface. There is a body of stagnant water below the surface of the ground, as those who have worked clayey soil have observed. This body of water saturates the soil and excludes the air, to the detriment of the plants.

Drainage lengthens the seasons.

By drainage of the fall rains before they become stagnant by draining off all extra moisture between the drain and frozen surface during the fall and winter and then in the springtime by draining off all the moisture from the surface as it finds its way into the soil.

Drainage deepens the soil.

By lowering the line of standing water and by making the subsoil accessible to the roots of plants.

Drainage warms the under soil.

As the rain falls through the air it acquires the temperature of the atmosphere. If this be higher than the surface soil, the latter is warmed by it; and if the rains be copious and sink easily into the subsoil they will carry this warmth with them to the depth of the drains. Thus the undersoil in well drained land is not only warmer, because of the evaporation is less, but because the rains in the summer season actually bring down warmth from the heavens to add to their natural heat.

The reason why drained land gains heat, and water bogged land is always cold, consists in the well-known fact that heat cannot be transmitted downward through water.

Drainage equalizes the temperature of the soil during the season of growth.

Water discharged from drains is always several degrees above freezing point. Heat naturally tends upwards, so that the soil is warmed from below during the germinating season of the seeds, and not infrequently the soil is during the month of April much warmer than the air is at night, although colder than the air during the day; therefore the soil of a drained field is free from the extremes of the temperature of day and night air.

Drainage carries down soluble substances to the roots of plants.

When rain falls upon heavy, undrained lands, or upon any land into which it does not readily sink, it runs over the surface, dissolves any soluble substance it may meet with, and carries it to the nearest ditch or creek. Rain robs such land of its fertility.

Drainage improves the quantity and quality of crop. It is the opinion of all who have observed closely that the plants and fruits grown upon under-drained soil are more fully developed and of much better quality than those grown on undrained soil.

Drainage increases the effects of manures. On undrained lands the rains dissolve the essential portions of the manures and carry them off, or, if lands are more than ordinarily wet, it prevents the rotting of the manure.

Drainage facilitates pulverization.

One object of plowing land is to pulverize it, and every one knows that a wet soil can never be pulverized, and plowing a clayey or loamy soil when wet does perhaps more injury than if it were not plowed at all, because if plowed when wet it becomes lumpy and difficult of culture.

Drainage prevents surface washing. Many plowed fields, especially where the land is rolling, suffer greatly in spring and fall time from washing by heavy rains. On drained land the rain is at once absorbed and washing is thus prevented.

Principles to be used in locating drains:

No. 1. Lay mains in the line of natural drainage. There are but few tracts of land that do not have some natural surface drainages, or places where the water gathers and in floodtime flows off. It is also true that as a rule the direction of the water of the soil is toward these places, and in order to intercept it and carry it off, the main should be located there. We must, if possible, work in the line of natural drainage if we expect to obtain efficiency of work and economy in construction.

If we consider the drainage of some distinct point or tract without reference to benefiting lands along the line by which it may be reached by a drain, then the question hinges upon the difference in cost of the line by the way of some near cut, and the more circuitous and natural route. The shortest and straightest drain is the best, provided it does the desired work as well. It is usually the case that the line of natural drainage may be straightened by short cuts here and there, making the drain less expensive and more efficient without impairing its value as a drain in the natural course.

It should be said in this connection that there are many flats, ponds, basins, etc., which can be reached by a main drain through some shorter cut than by the natural overflow channel. These matters should be examined with care before a location is made.

2. Laterals should be laid in the line of greatest slope.

Many think by extending a drain across a slope, water coming through the soil from above will be intercepted by the drain and thus prevented from passing further toward the foot of the slope. Practice has proved this to be a mistake. Lines for conveying the drainage water may be located at right angles to the slope if placed so far down on the bottom land that the grade of the drain is greater than the slope of the surface at the sides, as a few facts will show. Water oozes through the soil along the line of the steepest slope, at all times seeking a lower place, where it can remain at rest.

If a drain is placed across this course of soil water, the descent of the soil channels being greater than that of the drain, the water will flow out of the joints of the drain and continue to ooze through the soil, only a part being carried away in the drain. Place the drains up and down the slope, and all water coming into the drain will be carried away quickly, and little currents induced to flow toward the drain from both sides.

The above refers particularly to hillsides, requiring drainage, and is applicable to flat lands, having any slope whatever.

There are sags, swamps and points into which an outlet tile must be extended by the most feasible course, after that the general course supplies.

3. Avoid short laterals where a system can be adopted in which long parallel laterals can be used. This is a matter that has to do with the economy of the work rather than with its efficiency.

Every main or submain will itself drain the land for a certain distance on either side of it. All laterals, in order to reach these mains, must be laid through the belt of land thus drained, and hence a part of each lateral will be useless except to conduct the water to its receiving drains.

The fewer junctions there are in a given tract the less waste of length of lateral drains there will be.

There are localities where, on account of the contour of land, the short laterals are necessary.

4. Make the lines as straight as practicable, and change direction by easy curves. Drains can not always be made straight from one end to the other, yet short crooks should always be avoided. Straight lines may be run and connected by good curves which will admit of the drain being put in proper place and acomplish the work far better than can be done by irregular crooked lines which usually mark the small water courses. The disadvantages of a crooked line are that the tiles are laid with greater difficulty and more imperfectly, there is a loss of grade where it is needed, the friction of the running stream against the walls of the drain is greater than in straight lines, and a greater length of drain is required to accomplish the same purpose.

5. Bring all land which is deficient in natural drainage under the influence of drains.

This requires the investigation of the entire watershed for the purpose of determining how complete the natural drainage is. The engineer should adopt in his own mind some standard of degree of thoroughness with which he purposes to drain a given tract, and locate his drains with reference to the natural wetness of the land. He should find out whether the water comes from the surface of some adjoining higher ground, or from distant springs, or is deep water from slopes. If parts of the field are naturally dry, or as dry as it is proposed to make the other parts, he should pass it by and put drains in the wetter portions, so as to bring them up to the standard.

DATA REQUIRED FOR LOCATING DRAINS.

The knowledge of a piece of land which is necessary for the proper laying out of drainage system may be obtained in one of two ways, or partly by both.

1 The engineer may by carefully inspecting the land with the aid of some one familiar with both surface and soil peculiarities, determine upon the proper system and mark out the lines readily. There is a feature connected with the location that is gratifying to the engineer, which is that, when the correct and natural plan of locating has been hit upon, the whole system may be developed with ease.

2. More or less work with a level may be required in order to obtain the facts necessary for determining upon the best plan of work. The slopes may be so silght or so deceptive to the eye and the lines of natural drainage and best points of outlet so obscure that it will require an instrumental survey to determine them.

After the lines have been located upon the ground, then their location in the ground as to depth and grade must be done with the level, if any degree of accuracy in the construction of drains is expected to be attained.

The grade of a drain is its rate of fall and is expressed in decimals of a foot per hundred feet and is called so much per cent. Determining the grades upon which the drains should be laid requires much skill and knowledge of practical details of construction, together with the understanding of the requirements of the soil, capacity, cost and efficiency of various kinds and sizes of drains.

The minimum grade that may be used successfully for the tile drains is a matter of great moment where level lands are treated, and will depend much upon the accuracy with which the drains will be constructed.

Grades as low as one-half inch per 100 feet are in successful operation, giving good results on thousands of acres of land. Mains laid on a level are sometimes used with success, the flow through such mains depending upon the head given by the free water in loose soils, and by lateral drains having a grade greater than that of the main. The lack of fall must be offset by increased size of drains and by the greater degree or accuracy in their construction.

When a sub-main or lateral enters another drain it is best to have an outfall from the branch line into the main. This is commonly called a "drop" and should be proportionate to the size of the tile used on both lines. For example, branches into a 6-inch main should drop .20 feet; into an 8-inch main, .30 feet; 10-inch, .40 feet; 12-inch, .50 feet. The depth with which drains should be laid is a matter which has received a good deal of attention since the time that under-drainage began to be practiced. Advocates of deep and shallow drains have very earnestly argued their favorite theories.

It is one of those cases in which theories do not work out in practice, the factor which prevents this being the variations in the characteristics of the soil to be treated.

In speaking of depth of drainage, 4 feet is called deep drainage, 3 feet medium, and 2 to 2½ feet shallow drainage. If drains are laid deep the soil must be susceptible to the ready percolation of water, and by the process be converted into a soil of greater or less value to plants. Another advantage is that the soil has a greater reservoir capacity for water, which is valuable in times of excesive rainfall, and still another, the drains may be laid further apart.

This is true for deep, permeable, rich soils, and with such there is no doubt as to the value of general four feet drainage.

On the other hand, many subsoils at a depth of four feet have no fertility in them. Though plant roots often penetrate them, seeking for moisture, they are quite retentive, and drainage water passes through them slowly. In such cases drains of less than four feet are of greater value for agricultural purposes. It may be said that for farm lands lateral drains should be about three feet, unless the compact and retentive soil indicates that less depth should be used. When it is attempted to follow any general depth the necessity of obtaining suitable grades for the drains will often make some parts of the drain deeper or shallower than desired. A nice and economical adjustment of the depths of the several drains of a system can be learned only by practical work.

A practical knowledge of the field, coupled with the facts on the field book, form the key to the dormant resources of the soil.

The frequency of drains is also a question upon which there is a wide difference of opinion and consequently a difference of practice.

It would be a waste of labor and material to place drains 40 feet apart in some of our soils, while, on the other hand, to place drains at intervals of 150 feet would come far short of accomplishing thorough drainage. Generally drains are placed about every 100 feet, but this feature of the work should be very carefully studied before deciding upon their frequency.

No set rules can be given in regard to how many acres a given tile will carry, for the grade had much to do with amount of water a given size tile will carry. On ordinary flat lands I would not recommend using any tile smaller than five inch.

THE ERADICATION OF BINDWEED, OR WILD MORNING-GLORY.

U. S. Department of Agriculture, Farmers' Bulletin 368.

INTRODUCTION.

The terms "bindweed" and "wild morning-glory" are rather indiscriminately applied to the various species of the genus of plants known by botanists as Convolvulus that are of importance as weeds. In certain limited sections other common names are used to refer to these species, such as gopher vine, pea vine, and wild sweet potato. By far the larger number of these plants are classified under the two species *Convolvulus sepium* and *C. arvensis*, the former a native of this country and the latter an introduction from Europe. There are a few other species, principally *Convolvulus sepium repens* and *C. californicus*, that occur as weeds in certain regions. The former is a variety of *Convolvulus sepium*, but is often referred to as *C. repens*.

In many parts of the country these species rank among the worst of all the weeds that trouble the farmer, and in some regions they are by far the worst. Being perennials, they propagate not only by their seeds, but also by their underground parts. It is the latter character especially that makes them such formidable enemies to the tiller of the soil. The common or cultivated morning-glory, with the large, bell-shaped flowers of various colors, is sometimes found in fields where it has escaped from cultivation. This is an annual not difficult to control and should not be mistaken for a species of Convolvulus.

INJURIOUS EFFECTS OF BINDWEED.

For convenience in considering the injury caused by bindweed, the various types of farming may be divided into four general groups: (1) The growing of cultivated crops, which includes truck, small fruits, and commercial seeds; (2) small-grain growing; (3) orcharding and vineyarding; and (4) hay growing.

(1) It is in the first group that the wild morning-glory, or bindweed, gives the most trouble. It not only contends with the crops mentioned for the moisture and fertility of the soil, but climbs and twines around them, dragging them to the ground. Unless thorough and frequent cultivation is given from the first, the bindweed will get such a start that subsequent tillage will drag down much of the top growth of the crop. Some crops will grow better than others in a bindweed field. Corn, for instance, if it secures a good start, will make a fairly good growth in spite of the weed. But such low-growing crops as potatoes, strawberries and onions are overpowered and smothered unless most persistent cultivation and expensive hand hoeing are pursued.

It is impossible to eradicate this weed in cultivated crops with the implements commonly used, as many of the stems slip through the teeth or shovels without being much disturbed. In fact, anything short of good cultivation is a benefit to the bindweed, since insufficient cultivation merely breaks it up and distributes it over the field. After the crop is laid by, the weed grows undisturbed and often becomes a dense mat of vines on land that had been given fairly good cultivation earlier in the season. In many cases this weed has caused a discontinuance of this type of farming.

(2) As a rule, bindweed does not do much damage to small grain. There are, however, regions especially favorable to the growth of this weed where the crops are greatly injured. Besides robbing the soil of moisture, this weed binds and drags down the tops; it also makes harvesting difficult by clogging the knife of the binder.

The time of sowing has much to do with the amount of growth made by the weed. If grain is sown in the fall or early spring it will have made a fair growth before the wild morning-glory gets under way. The height of the stand is also a factor, as a tall growth will produce a greater shading effect than a short one. In western Kansas, where a low-stemmed type of wheat is grown, the bindweed has worked in badly, there being entire quarter sections which are thickly set with it. In those localities, however, where small grain occurs in a short rotation with well-cultivated corn and clover the weed does not do much damage to the grain.

(3) In orchard and vineyard lands, and this applies especially to those of the West, the wild morning-glory is of still less consequence. The use of the weed cutter or weed knife in orchard cultivation, as is the common practice in California, has greatly lessened the weed problem. Furthermore, the shading effect of the trees does much to keep the weed under control.

Those ranchers who give normal cultivation to their orchards do not worry much about this weed. To a certain extent they consider it an advantage, since it springs up after cultivation stops and makes a good winter cover crop. But in cases where orchards receive insufficient cultivation the weed is a more or less serious injury to the trees, especially to young trees. Bindweed is a greater nuisance in vineyards than in orchards on account of the lack of shade and the greater difficulty in the weed knife.

(4) The presence of wild morning-glory vines, although it injures the market value of hay, probably does not materially affect its feeding value. In the case of alfalfa, clover, cowpeas, and other hay crops that produce a shading effect, the bindweed is a neglible factor.

DISTRIBUTION.

Bindweed is found in most sections of the United States and southern Canada. Although it sometimes occurs on upland soils, it is found more often on deep bottom lands and on rich prairie soils. The weed is therefore at its worst on the most productive and most valuable land. It grows on the valley lands of New England, the middle Atlantic states, and to a lesser extent in the Southern states; also in the entire area of the Corn Belt and on the valley lands of the West. East of the one hundredth meridian the native hedge bindweed is the most common species, although the field bindweed is also widely scattered. West of that point the field bindweed is probably the most common species, the hedge bindweed occurring to some extent in California. The trailing form with downy leaves (*Convolvulus sepium repens*) has been reported as a weed from central-western Kansas only, in which locality it has become a most serious menace to the wheat growers. The fourth species of importance as a weed is the California form (*Convolvulus californicus*),which occurs only in central-western California, for the most part on hill lands.

Although bindweed usually occurs distributed generally over the land, it is sometimes confined to well-defined patches. It is not an uncommon sight to see one or more of these patches in a field, each of a more or less circular outline, indicating that the weed is spreading by its underground growth from a central point of infection. Where the land has been infested for some time and careless cultivation has been given, the weed becomes scattered over the land.

Another interesting point which has been disclosed by a study of this weed under field conditions is that the underground parts rarely penetrate the subsoil. This depends, however, somewhat on its character, since a subsoil that resembles the surface soil in texture and fertility admits the roots and rootstocks to a certain extent. In all cases where the subsoil is of an impervious or clayey nature the underground parts of the plant are confined to the soil stratum entirely.

METHOD OF ERADICATION.

From the facts stated it is evident that the only successful methods for the eradication of bindweed must be based on the suppression of all top growth, in order to starve out the underground parts, except of course those methods, at present of little value, which have for their object the direct killing of the roots or root-stocks by the application of chemicals. A great many farmers are looking for some easy method of killing the bindweed, and in the meantime are letting it cover the fields and festoon the trees of the orchard. They are looking for some magic "remedy" that will completely eradicate the weed with a small amount of exertion on their part. It must be understood that such a formidable enemy as this weed requires heroic treatment. Other farmers have gone at the problem heedlessly, as in the case of a man who followed the root of a plant to the depth of 4 feet and then applied a large quantity of salt in the hole.

Various methods have been tried to keep down the top growth, and hence starve out the underground parts. There are three methods that have given satisfactory results, namely, clean cultivation, alfalfa growing, and hog pasturing. There are other methods that have been tried, but not with a large measure of success. These include the placing of building paper, beet pulp, apple pomace, straw, or manure on the ground to smother the weed growth, and also the application of chemicals. Conditions in irrigated regions are complicated by the fact that bindweed is often allowed to grow along irrigation ditches, the water in which distributes the seed. The water of streams, especially at flood times, is also a factor in distributing the seeds and roots to other land.

CLEAN CULTIVATION.

Bindweed can be eradicated by clean cultivation if thorough and persistent. The case requires going over the land once every week or ten days during the entire growing season of the weed, which is between the spring and fall frosts. Two years of this treatment will accomplish the result in most cases, and it is probable that one year will suffice where the plant does not root deeply. The difficulty is that many farmers will not cultivate as thoroughly as is necessary. Even a small top growth is enough to form some new underground growth and rejuvenate the old roots or rootstocks, thereby carrying the plant over to the next season. Cultivation has the further advantage of inducing a rapid germination of all seeds of the weed which are in the soil, the young seedlings being promptly destroyed by the subsequent tillage.

GROWING ALFALFA HAY.

Numerous cases have been found in which bindweed was greatly lessened or entirely eliminated by seeding an infested field to alfalfa for hay. This is effected by two factors, namely, the frequent cutting and the smothering effect of the crop. The frequent cutting serves about the same purpose as clean cultivation in keeping down the top growth of the weed and hence starving the underground parts. After each cutting alfalfa makes a rapid growth, more rapid than the weed, which is thereby shaded. After the first year of alfalfa, bindweed is usually found to be making only a small growth, with stems but a few inches long and leaves of miniature proportions. This method is most effective where the cuttings are made as frequently as possible and where a thick, vigorous stand of alfalfa is secured. An interesting case was brought to notice in the Muskingum bottom land near Marietta, Ohio. Two adjoining fields, both thickly set with bindweed, were seeded the same season, one to timothy and the other to alfalfa. After several years both fields were plowed and the whole planted to corn. It was very apparent where the alfalfa had been by the absence of bindweed, while the other piece of land still contained the weed.

Alfalfa growing as a method of bindweed eradication is applicable of course, only where it is possible and desirable to grow alfalfa. But where conditions are favorable there is little doubt that two or three years of alfalfa will greatly reduce or sometimes entirely destroy the weed in the most thickly infested fields. By following this crop with a cultivated crop and carefully keeping down the weed growth that still persists the land can be finally cleaned.

PASTURING WITH HOGS.

Hog pasturing as a method of eradicating bindweed is based on the fact that hogs are very fond of the roots and rootstocks of this plant, which taste much like the sweet potato. Hence, if hogs do not have their noses rung or slit they will root to a considerable depth to obtain the underground parts. It is common to see hog pastures which have obtained bindweed with the surfaces torn up and rough, showing where the hogs have been at work, even though there is an abundance of forage for them. It is the universal testimony of the best farmers that pasturing with hogs will reduce the prevalence of the weed, although but few have given the plan a thorough trial. This method can be employed in two ways: (1) By turning the hogs on ordinary pasture and (2) by plowing the land and then turning on the hogs.

The first way probably requires a longer time to accomplish the result than the second. Hogs not only eat the tops closely, but they also root for the underground parts in pasture land. Mr. George Wiggins, of Lodge, Ill., has practiced this method for a number of years with success. He leaves the land in pasture for about three years, with a sufficient number of hogs on it to keep it closely pastured. In the summer of 1908 he showed the writer a field of corn which had been in corn and oats for the past three years, previous to which it had been in hog pasture for three years. Before the pasturing began it was full of bindweed, but there is none to be seen now. This field contains 30 acres, and carried about 100 hogs, most of them of the spring brood. Adjoining this field was another field of corn, which had been in hog pasture the preceding three years. Before pasturing there had been a great deal of bindweed in this field, but there is none at present. Another field of 14 acres in clover pasture for the first year was being run with 60 hogs. There was bindweed scattered all over it, but it was making a poor growth and was being rooted out. In breaking a pasture Mr. Wiggins plows in the fall, leaving the hogs to root for all they can get in the plowed land. In the spring he plows again and plants corn. He does not ring his hogs, of course. Many other farmers have noticed that running hogs on grass pasture greatly diminishes the quantity of the weed.

With the second plan, the land is first plowed. This accomplishes several purposes; it loosens the soil so that hogs can root more easily; it turns under all other vegetation, thereby limiting the hogs to the bindweed only; and it turns many of the roots and rootstocks to the surface, where the hogs can see them and get them to better advantage. It is often best to plow the infested land more than once during the season. Only a small quantity of feed should be given the hogs in order that they may be forced to devote their attention to the bindweed. Although hogs may not make quite as good gains on this diet as on others, many farmers have reported that their hogs have done very well under such treatment. It is a good plan to have more hogs than are necessary to keep down the bindweed growth and to move them to other pastures at times.

A typical case of the employment of this method of eradication is that of Mr. Price N. Jones, of Towanda, Ill. Mr. Jones had a small patch of about a quarter of an acre of blackberries in which the bindweed became so thick that the bushes ceased to make much growth. He cut them down in September and plowed the land soon afterwards. The fence was then opened to admit some 15 hogs from an adjoining grass lot of 3 acres. The hogs were not on a full feed of corn and at once began rooting vigorously at the bindweed. During the fall, winter, and spring they rooted the field over thoroughly, and practically no bindweed has come up since.

The use of this method means that the land must be given up to this treatment for at least a year. Just how long it requires to completely eradicate the weed it is difficult to say, since it depends upon conditions, especially on how deep the underground parts go. Where the weed does not root deeply, a year is probably enough. Where it does root deeply, two years might be required. It is best to put the land to a cultivated crop following hog pasturing in order to kill the scattering growth that may persist.

As a suggestion, this method of hog pasturing might be used for short periods in a regular rotation without interfering in any way with the rotation. For instance, Mr. Jones turned hogs on oats stubble one summer, the field being seeded to clover, the hogs being kept on during the fall and winter and rooting up the soil a good deal, but not enough to damage the clover seriously. He plowed this field the following fall and put the hogs on again till spring, and then planted corn. He states that the bindweed is very materially reduced.

There are certain features about hog pasturing that limit its use as a means of weed control. The water supply is one of them. It is, of course, much more convenient to have water in the field than to transport it. Most farmers have their hog lots close to the farm buildings, which is more convenient than having them at a distance. Again, it is necessary to make the fences "hog tight," if they are not already so, which involves labor and expense. This, however, may be done cheaply by putting up a temporary hog fence, which, after the hogs are taken off, is to be removed and used again. It is therefore difficult to say whether or not a particular farmer should use hog pasturing as a means of exterminating the bindweed. If it fits into his scheme of farming and the difficulties are not too great, it would be well to employ it. Each case is a problem in itself. Where the conditions are favorable hogs are likely to prove most effective means of getting rid of this weed.

OTHER METHODS OF ERADICATION.

Pasturing with sheep.—Pasturing with sheep has been reported to have killed the bindweed, but the evidence on this point is meager. It is possible that if a grass pasture is run with a sufficient number of sheep for a long enough time the weed will disappear. Grass can stand close pasturing better than most weeds, if they are grazed equally close, but it remains to be demonstrated whether or not this plan will completely eradicate the bindweed, and, if so, how many years it will require. In parts of the far West, where grass becomes brown and dry during the summer season, sheep are reported to have killed the weed, for the reason that it is often the only vegetation that remains green in the pasture at that season. There is no doubt, however, that sheep are of assistance to hogs in pasturing for the eradication of bindweed. They eat the tops close to the ground, which checks the growth of the weed.

Use of smothering crops.—By smothering crops are meant those crops, other than alfalfa, that exert a shading effect on weed growth, such as cowpeas, soy beans, millet, sorghum, and buckwheat. No extensive trials of these crops as a means of controlling the bindweed have been made, so it is impossible to define at the present time their adaptability for this purpose. With a continuous succession of such crops, and when thick stands are secured, it is probable that in time the weeds would be much reduced. At best, however, these crops are hardly as effective as alfalfa.

Use of artificial smothering material.—Building paper, manure, beet pulp, apple pomace, straw, and other litter have been much used in the attempt to smother out bindweed growing in patches. It is necessary to apply such material, except building paper, quite thickly on the ground to prevent the weed from pushing through, as it has been known to go through a thickness of 2 feet. This method is therefore rather expensive and is not applicable to any but small areas. Indeed, in most cases it is misdirected energy, which could be employed more profitably in some other direction. The use of building paper has been tried with some success on small areas where the laps were carefully weighed down with soil to exclude all light. Such paper can be purchased at from $2.25 to $4 per 1,000 square feet, depending on the thickness of the ply, which is at the rate of $97 to $172 per acre. This cost makes the method impracticable except for very small areas. The thin ply would be about as satisfactory as the thick. If the bindweed were inclined to grow through at the laps it would be necessary to lay another thickness of the paper, the laps running at an angle to those underneath. The paper would probably have to be renewed each season, and it would take as long to subdue the weed as it would by means of clean cultivation.

Use of chemicals.—Many farmers have applied salt, kerosene, lime, and other substances for the purpose of killing the underground parts of the bindweed. One difficulty with this method is that on account of the habits of the roots and rootstocks of bindweed such applications must be spread all over the infested area, which makes the cost so high that these materials can be used profitably in only a limited number of cases. Another difficulty is that a quantity sufficient to kill the weeds will also injure the land to such an extent that no crops can be grown for several years subsequently. Crude salt is probably the cheapest material for the purpose.

Tests have been made by agricultural experiment stations and farmers to kill bindweed by repeated applications of salt, iron sulphate, arsenite of soda, and other chemicals in solution as sprays. Such experiments have failed to show that this method is of any value. Although the tops are killed to the ground new plants immediately spring up. The sprayings must be given once every few days during the growing season for at least two years before the weed finally ceases to grow. The result can undoubtedly be accomplished in less time and with less expense by some other method.

SUMMARY.

(1) The names bindweed and wild morning-glory refer to the several species of the genus of plants known as Convolvulus that are considered weeds, including primarily hedge bindweed (*Convolvulus sepium*) and field bindweed (*C. arvensis*), two other species, *Convolvulus sepium repens* and *C. californicus*, being of secondary importance.

(2) These weeds are a very serious detriment to the growing of crops in many regions. They are especially important in cultivated crops, are sometimes of a serious nature in small grain and orchards, but do no serious damage to forage crops.

(3) Bindweed usually occurs on bottom lands and rich prairie soils. It is sometimes found growing in patches, but it is more common to find it distributed more or less generally over the field. Its depth of rooting is governed largely by the nature of the soil.

(4) The underground parts are of two forms, exemplified by hedge bindweed and field bindweed; the first is propagated by rootstocks and the second by roots. The nature of the underground parts of both of these forms indicates that the top growth must be kept down, thereby starving out the roots and rootstocks, in order to eradicate the weed.

(5) Several methods for accomplishing this eradication have been successful. Clean cultivation is one of the best in many cases. It is essential to employ such implements as will keep down the top growth successfully. Where the weed occurs in patches these should be marked off and given special attention.

(6) The bindweed may be greatly reduced or entirely destroyed by seeding the land to alfalfa. The frequent cutting and the shading effect of this crop are the determining factors. Alfalfa should be followed by a cultivated crop to complete the work of destruction.

(7) Pasturing with hogs has been successful in killing bindweed, since hogs are quite fond of the underground parts. This method can be used with both ordinary pasture and fallow land. Results can probably be obtained in less time in the latter case.

(8) Several other methods have been tried, but they are for the most part of doubtful value. The use of chemicals has not been attended with much success in the control of this weed.

WHAT I KNOW ABOUT HOGS.

By E. H. Miller.

(Before Worth County Farmers' Institute.)

The three animals that are most widely spread over the earth are the cow, horse and pig.

These animals did not spread through their own efforts but were developed by man and gradually adapted to nearly every place where man can live.

The pig had its origin in India.

Its first conquest was that of Eastern Asia and the Archipelagos of the Eastern seas. China fell easy victim to the love of the pig. Records show that raising the porker was a high art in China 3000 years before Christ. One of the greatest of the Chinese feast days is known by the name of pig. The Koran forbids the use of pork just as the Mosaic law does, hence the pig is not raised in countries where the Mohammedan law rules. But in all other parts of the world the hog is popular as the cow or horse and there are as many varieties of pigs, due to local causes and different ways of breeding in different countries as there are varieties of horses and cattle. We have in this country the Poland Chinas, Duroc Jerseys, Chester Whites, Berkshires, Yorkshires, Tamworths, Hampshires, and Mule footed hogs, and perhaps some other kinds that I do not care to mention. Last year about 2,600 hogs were shown at the Iowa state fair; the year before the pens held 3,000. These figures would indicate the raising of thoroughbred swine was one of Iowa's leading industries. Now as to the best hog or breed of hogs to raise, I suppose you all think I will say Chester Whites, but I am not going to say any such thing. The best hog to raise is the one you like best and can make the most money out of. The ultimate end of the hog is the pork barrel and the hog that will convert the largest amount of corn into the most pork in the shortest time is the hog that we are all looking after.

Now as to breeding stock I prefer matured stock or hogs that are at least one year old. I want breeders that have a good head, a good neck, good shoulders, a good straight back. Drooping back of the shoulders is a great objection among breeders. A low backed pig is more liable to break down. A high backed one will have a limited digestive capacity; another important thing is well sprung ribs; they are generally accompanied with good shoulders and hams. In a typical hog the side lines should be straight; all points, side, ham and shoulders should touch a rule when placed against the side. A hog with well sprung ribs is generally a good feeder and breeder.

A hog should have good hams and shoulders; they are the most valuable parts of the hog. The ham should run well down on the hock, well rounded cut, not curved in behind. The legs should be heavy and straight, this not a fancy point. A hog is not worth much with poor weak legs; the size of the leg is an indication of the size of bone.

The legs should be placed under the corners, not under the center of the hog. The feet are an important point; when it comes to marketing good feet will carry large hogs to market but poor feet will sometimes give out with even light hogs. Hogs with poor feet are more liable to contract rheumatism. The tail is a continuation of the spine and is an indication of the hog's condition.

There are a good many minor points that I might mention but I think that these are the principal points to look for. Great care should be used in feeding the breed sow and a large part of the ration should be bone and muscle building foods such as oats, skim milk, shorts, etc., with a very little corn and I think that it is just as well to cut corn out of the ration entirely.

After farrowing the sow should be fed little for the first 24 hours except water. After this increase the feed gradually for 3 or 4 days until you have her on full feed. If pigs are farrowed in late spring or summer and you have a good pasture for them the feeding and care are easy problems; corn, pasture, milk and shorts make a ration that is hard to beat, but if the little fellows make their appearance late in the fall or early spring the case is more difficult to handle. Be careful not to let the little fellows get chilled; a chilled pig is almost as good as a dead one. For growing pigs I know of nothing that is better than sweet skim milk with shorts and a small amount of corn. When the skim milk is short you can supplement it with tankage. 5 parts corn, 3 parts shorts, one part ground oats, one part tankage, is considered by some hog raisers as an ideal ration for growing. This fed with one quart of milk to pigs about 3 to 6 months old ought to make fine gains. A straight corn ration can be fed at less cost. But I believe that the effect of the bone and muscle forming foods in the shape of shorts, tankage, etc., amply repay the extra cost in building good, strong frame and strong constitution.

We have kept Chester White hogs in this way 7 years and never had a case of cholera or but very few sick hogs. Now about pasture; some have lots of trouble with hogs on pasture especially rape pasture. I believe that the principal cause of having trouble with your hogs on rape is that you let it get too large. If the rape is large the young pigs run through it when the dew is on and get wet which causes them to chap and get sore. We find that by turning on when young and tender they eat it better than after it gets old and tough. It is surprising what a difference it makes in the other feeds when you have a good pasture.

Hogs should always have access to plenty of good water and salt and coal, either slack or charcoal, is a good cleanser of the system of man; then why should it not be in the hogs?

A little time spent each day in looking over the hog pen fence may look like time thrown away but I think it is time well spent; you can observe how your hogs are doing; whether you are feeding too much or too little. You can see if some are being crowded and need a separate pen or better care; always feed with judgment and discretion.

One thing I want to emphasize is the comfort of your hogs; as I said before the final end of the hog is the pork barrel and you wish to make the most pounds out of him at the least expense possible. A good dry feeding place should be provided also good roomy sleeping quarters, with plenty of bedding. It may be said that a pig kept for fattening purposes after it is from 8 to 9 months old is kept at a loss to the owner as it ought to have been converted into meat, says London Live Stock Journal.

The cost of keeping in store condition is unprofitable and the farther attempt to fatten a hog after it weighs 300 pounds is unprofitable as compared with feeding pigs that weigh from 100 to 200 lbs. There is no question with me about whether it is profitable or not to raise hogs with the present price of corn and the present price of hogs, if properly taken care of. With hogs near the 8-cent mark and corn at 45 to 50 cents there is no doubt in my mind that there is good money, a saving in time and labor to turn the hogs in and let them do their own husking. This is a plan I have never tried and I think that it would be all right if you had your corn field in a convenient location to water, etc.

Silage is highly recommended by some feeders as fine feed for breeding stock and a substitute for pasture. One thing that recommends it is the extreme cheapness.

There is a lot of good things that I could say about hogs; how they have been instrumental in helping many of us pay off the mortgage on our farms, how they have helped us to build good buildings and buy many of the things that make life worth living but perhaps I have taken enough of your valuable time so I will close with a story.

An old man was picking strawberries on the mountain side one day in August when he heard the stones rattling down the hillside above him, and on looking up saw a big grizzly coming at him; he turned and ran with the big 1600 lb. bear in pursuit. Then he happened to think the river was frozen over with thin ice that would hold him but would not support the bear.

So he ran until he got to the river and, as he thought, went over in safety and the bear went through.

When he was through one of the listeners said, "I thought you said it was August when that old man was picking strawberries." The old man said, "I might have kept you here to tell you all, but it was August when I was picking those strawberries and it was January when I got to the river."

BOYS AND GIRLS' AGRICULTURAL CLUBS.

U. S. Department of Agriculture, Farmers' Bulletin 385.

INTRODUCTION.

There have been few developments in recent years of greater educational interest and significance than the work done by associations of boys and girls in agricultural and domestic-art undertakings. As a rule, these have had their beginning in some form of competitive contest for special occasions or awards. The organization of clubs has usually been an incidental outgrowth of the plans for these contests, and the name applied to the organization itself has varied widely with the different purposes carried forward. Thus we find clubs for corn growing, cotton growing, potato, growing, fruit growing, poultry growing, live-stock study, bird study, home culture, and high school improvement. All of these have been more or less agricultural in their general character.

To any who are unacquainted with the nature of such clubs it may be explained that a corn-growing club is an association of boys who enter into a competition to determine which can grow the most or the best corn on a certain area of ground under definite rules of planting, cultivation, and exhibit of their product. A cotton-growing club would undertake a similar competition in producing the best yield of cotton under prescribed conditions. For girls these contests have frequently taken the form of bread-making, sewing, or joint contests with boys in gardening or poultry raising.

The results already apparent from such competitive co-operative work may be summarized as follows:

(1) Individually the members of such clubs have been led to observe more closely, to recognize good and bad qualities in the products they have grown, and in the insects, fungi, and other various conditions affecting their work; they have met and learned to solve some problems in the improvement of plants, fruits, animals, and house work; they have learned that improvement in one direction is not always or even usually, accompanied by improvement in all directions; they have learned something of the value of labor, the cost of production, and the keeping of simple accounts with different farm and household affairs; they have been encouraged to read good literature and have learned some of the sources of good agricultural literature; their views have been broadened by contact with others and by visiting institutions of learning, highly developed farms, and other places of interest; and, finally, the power of taking the initiative has in many cases been strongly developed in them as individual and responsible members of the community.

(2) Collectively they have learned the value of organized effort, of co-operation, and of compromise; and the social instinct has been developed in them—a matter of great importance in rural districts, where the isolated condition of the people has long been a great hindrance to progress.

(3) The influence upon the communities at large, the parents as well as the children, has been wholesome. Beginning with an awakening interest in one thing—better seed corn, for example—communities have rapidly extended their interest to other features of rural improvement, with the result that in the regions affected by the agricultural club movement there has come about a general upward trend in the thoughts and activities of the people.

(4) These club activities have in many instances exercised a very stimulating, if not a "redirecting," influence upon the ordinary work of rural schools and teachers.

(5) The knowledge gained from the work of these clubs has demonstrated that the natural love of competition among boys and girls (as well as their elders) can be utilized to immense advantage in furthering their own education for efficiency.

Setting aside the question whether boys' and girls' agricultural clubs may eventually be superseded by more permanent organic developments in general public education, they have at least an undoubted value at the present time and seem to be an important, if not necessary, link in the evolution toward a more efficient educational system. Experience with them has gone far enough to furnish well tested plans for states and sections that are now ready to take up this work.

Various agencies have taken the initiative in starting this movement under particular local conditions, but the inspiration for state-wide activity in these lines has generally come from some individual or official source connected with the state department of education, the state agricultural college, or the United States Department of Agriculture. In the absence of such initiative the work has sometimes begun in the zeal and wisdom of some county officer or association, as the county superintendent of schools, the farmers' institute society, the county fair association, or teachers' association, the grange organization, or the Young Men's Christian Association. Experience has shown that the work has always been most permanent and productive when it has resulted in a definite local organization, preferably under the leadership of the county school superintendent.

THE RELATION OF CLUB WORK TO RURAL EDUCATION.

The organization and work of these various clubs has in many cases assumed the character of school "extension work" in agricultural education. As such it is directly contributory to the field of agricultural education in general; but in many instances it has acquired a very intimate relation to the regular work of the public elementary and secondary schools. Thus in Ohio the state superintendent of agricultural extension work writes that most of the boys' and girls' club activities are now conducted as a part of the school work and that "agricultural clubs as such are coming to be things of the past," so that no separate records or statistics of such work are now generally kept in that state.

The exhibits of what has been accomplished by these clubs are frequently the most attractive features of local and state fairs, and have perhaps done more than any other single influence to inspire the interest of the people in the usefulness of the instruction given in the common schools. The influence of such work upon the developing ideals of the proper function of the schools and their relation to the coming type of country life education is well shown in the prizes offered in a recent western state fair:

These prizes range from $2 to $25 for exhibits of work teaching girls household service and home appreciation; of work in applied civics and school service to the community; evidence of cooperative neighborhood work for school building and ground improvement; children's garden work, with plans, photographs, and descriptions; arithmetic applied to industrial and business affairs of the school, home, and community; "field work" in geography; class record of weather observations for three months or more; plan of farm (drawn, modeled, or constructed), showing buildings, irrigation system, crop rotation, etc.; construction work done by any pupil, showing mechanical and inventive ability, and best single exhibit of courses of study, plans, etc., showing ways of making school instruction more valuable and connecting it more intimately and vitally with community life.

SUGGESTIONS FOR THE ORGANIZATION AND WORK OF JUNIOR AGRICULTURAL CLUBS.

There are obvious advantages in merging agricultural club work closely with the interests of the public school and the home life of the pupils. The county superintendent of schools is in a position to utilize such community interest to the greatest benefit in vitalizing and unifying the enthusiasm of teacher, pupil, and parent. He can explain the plans of work to his teachers, and they in turn to pupils and parents, thus securing the clear understanding and cordial co-operation of all concerned.

There is need of a concrete object of effort in all such associated activity, and the local corn-growing, bread-making, or fruit-raising contest furnishes such an object. This object should be varied from year to year, or at least new lines of effort should be joined to it, in order to maintain a live and growing interest. The organization under which the work is done should be simple but definite. Responsibilities should be real and clearly placed. Orderliness is essential to impartiality and harmony. But the anatomy of the organization should be not conspicuous; the "average boy" does not derive much enjoyment from riding a horse of pronounced gothic structure, even in the cornfield.

The year's experiment or contest should be planned carefully, definitely, and early. Appropriate prizes and trophies should be provided. Reports of contestants should be received at intervals during the season, on blanks or suggestions previously given out. Letters of direction and encouragement should be sent at critical times from the local headquarters. Circulars, bulletins, and other means of instruction are to be supplied, and should always include the publications of the state agricultural college, the state experiment station, and the United States Department of Agriculture, in reference to the subject in hand. One of the chief values in this work is the training it gives in finding and using information that has already been published. State-wide co-operation wth other clubs and wth the agricultural college and experiment station should be secured, and if possible with the state superintendent of public instruction and the state fair association.

Occasional lectures and demonstrations should be made at county meetings of members, which may sometimes be held with advantage in connection with the county teachers' and farmers' institutes. As early as practicable the organization should develop plans for an annual district school exhibit of competing agricultural and domestic art products, followed by township, county, and state exhibits, the latter in connection with the state fair or the meeting of the state teachers' association. A distinctive badge or button worn by the boy and girl members of the clubs adds much to the feeling of community interest and dignity.

THE FIRST MEETING.

The first meeting for organization should include as many boys and girls of the county as can be brought together in the most convenient place. This meeting should be called by the county superintendent (or commissioner) of schools and should be thoroughly advertised in the county schools and papers. If possible it should be held while the schools are still in session, before the spring vacation; and it should announce a definite object. The following is suggested:

NOTICE.

"The boys and girls in the schools of———County, and any others between the ages of 12 and 18 years who wish to join them, are cordially invited to meet in the high school building in ———, on Saturday, ——— 19—, at — o'clock.

"The object of this meeting is to organize for the purpose of engaging in a county corn-growing and bread-baking contest this year. Each contestant will be supplied with seed, if necessary, and with complete directions for doing the work. An illustrated talk will be given by ———. Some fine prizes for the best work, amounting to $——, have been offered by ——— ———. If you want to get acquainted with other boys and girls in the county and enter into a lively and happy competition with them for these prizes, don't fail to be present at the time appointed Bring your teacher with you and as many parents as wish to come. If you come by rail, buy a "party ticket" so as to get the best rate. *Don't come too late.*

"Yours, for better corn and bread.

—— ——.

County Superintendent of Schools."

The prizes offered in such contests can usually be arranged for by cooperation with the county grange, farmers' institute society, teachers' association, bankers, leading merchants, and various local associations. The prizes may take the form of money, trophy cups, or banners, cultivating tools or planters, bread-making sets, bicycles, suits of clothes, "due bills" for merchandise, etc.

Near the close of the meeting, which should not be too long, a simple form of constitution should be ratified. It should have been previously agreed upon by members of the "advisory committee." Usually it will require no discussion and can be adopted by a rising vote. If time is limited the regular officers of the club may be elected at a later meeting; but there is decided advantage in placing responsibility of this kind upon the boys and girls themselves and developing familiarity with good parliamentary practice. The following general form of organization has been found satisfactory.

CONSTITUTION.

Article I. Name of club.

Article II. Objects of club.

Article III. Membership (including badge or button, and a provision for honorary members, if desired).

Article IV. Officers. (A president, one vice-president from each school district, a secretary-treasurer, and an advisory committee consisting of the county superintendent, the lecturer of the county grange, and the president of the county farmers' club or institute society.)

Article V. Duties of members. (As prescribed in the rules for contests.)

Article VI. Duties of officers. (Defined as usual in such organizations.)

Section —. The advisory committee shall arrange for all public contests and exhibits, the procuring and awarding of prizes, the sending of letters and circulars of information, the general county meetings of the club, and the reporting of statistics and other information to the state organizer.

Article VII. Subsidiary clubs.

Each local school having —— club members within its district may organize as a local club with its own officers, badge, local prizes, etc. Its advisory committee shall consist of the district school board and teachers, and its president shall be one of the vice-presidents of the country club.

When the constitution has been adopted membership should be determined by the collection of signed blanks, previously distributed, showing data as given in the following form:

ENROLLMENT RECORD.

Date ——————————, 19—

I wish to join the ——County —— Club, and hereby promise to follow all the rules of membership and contests.

(Signed) ————.

Age at nearest birthday —. Date of birth ——, 19—.
Township ——.
School district ——.
Teacher ————.
My postoffice address ——. Box number ——. R. F. D. No. —.

The members of a corn-growing club usually keep a careful record of all work done in connection with the annual contest. It is advantageous to supply the basis for this in the form of a little memorandum book which covers the following items and may well include the club constitution and list of officers:

HOW THE CROP WAS GROWN.

1. Grown by ——, school district ——.
2. Postoffice address ——.
3. Area of plat in square rods ——. (Not less than —acre.)
4. Kind of soil (loam, sand, clay) ——.
5. Kind of crop grown on it the year before ——.
6. Kind of crop grown on it the second year before ——.
7. Kind and amount of fertilizer used ——.
8. Cost or value of fertilizer ——.
9. Date of plowing ——. Hours required, self ——, horse ——.*
10. Depth of plowing (in inches) ——.
11. Additional preparation of the ground:
    - (a) How many times disked ——, when ——.
    - (b) How many times harrowed ——, when ——.
    - (c) How otherwise prepared ——.
    - (d) Total hours work of preparation, self ——, horse ——.*
12. Kind of corn planted ——. Variety name ——.
13. Seed procured from ——.
14. Quantity of shelled corn used for seed ——.
15. Number of ears tested ——. Number of kernels from each ——.
16. Method of testing ——.
17. Number of ears which proved satisfactory ——.
18. Number of hills planted ——; date ——, 19—.
19. Date when first hills came up ——.
20. Number of hills failing to come up ——; why ——.
21. Date of each cultivation and implement used ——.
22. Total hours cultivation; self ——, horse ——.*
23. Date of hoeing crop ——, 19—. Hours work ——.
24. Number of stalks with two ears ——.
25. Number with no ears ——.
26. Number of hills with three stalks ——; two ——; one ——.
27. Date of first tassels appearing ——, 19—; ears ——, 19—.
28. Date of any frosts on the crop ——, 19—.
29. Date of cutting and shocking ——, 19—.
30. Date of husking ——, 19—.
31. Date of selecting ears for exhibit ——, 19—.
32. Number of ears first selected ——; weight in pounds ——.
33. Care of selected ears after husking ——.
34. Weight of ten ears at time of exhibit ——.
35. Was the selecting done without any other person present? ——.

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*If two horses are used, count as twice the time of one horse.

36. Was all the work of production done by the contestant (except plowing, weighing, and hauling the crop)?* ——.
37. Total number of hours worked ——.
38. Total number of hours horse* worked ——.
39. Value of own work at ——† cents per hour, $——.
40. Value of horse's* work at ——† cents per hour, $——.
41. Value of ground rent for crop at ——† per acre, $——.
42. Value of fertilizers used, $——.
43. Value of salable crop at ——† cents per bushel, $——. (Weigh good ears when drawn from the field, and count 70 pounds to the bushel.)
44. Profit on the season's work, $——.

In addition to the foregoing record, which should accompany the exhibit offered by the contestant, an essay covering the same facts in a connected description is often required. This and the calculations required in the report furnish a helpful means of connecting field work with school work. It is usual to announce at the time of the first meeting the special rules that govern the contests. These may be conveniently summarized in the following form:

RULES FOR CONTESTANTS.

1. Each contestant is allowed to make only one exhibit entry each year.

Each contestant must be regularly enrolled in the county club before beginning work.

3. Each contestant must be under —— years of age.

4. Each contestant for corn prizes must prepare his ground, test seed, plant, cultivate, cut, and husk crop, all without assistance from any other person. (He may have assistance in plowing, fertilizing, and hauling crop, and should have in weighing it.)

5. Each contestant must study the score card and the bulletins recommended by the state organizer.

6. Each contestant on essays shall write not more than —— words, and all must carefully fill the blanks on "How the crop was grown."

7. Each contestant's record and essay must be indorsed, with his exhibit, by his district teacher as evidence of her confidence that it is all the product of his own work.

8. All exhibits are to be the property of —— ——* at the end of the exhibit.

Corn growing and bread making or sewing are the most convenient objects of effort in starting this kind of work. Rules for the girls' contests should be obtained from the domestic art department of the agricultural college or other state institution admitting girls. Other forms of contest may be started the second year if desired.

AVAILABLE PUBLICATIONS.

Most of the bulletins and circulars included in the following lists, with the exception of the Farmers' Bulletins, were prepared more or less direct-

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*Draw a line through "plowing" and "hauling" if contestants did that alone.
†Uniform rate agreed upon for the whole state.
*They are sometimes sold at auction when the expenses of the meeting are not otherwise met.

ly with reference to junior club work and study. A few others have been given because of their general relation to some phase of the work described in the foregoing pages. In many cases these will suggest new lines of club work that may be entered upon at a later time. The list could easily be made much longer, but care has been taken to include no publication for which a price is charged.

In sending for copies of these publications care should be used to designate exactly by title, number, and volume or series. None of these is supplied by the Department of Agriculture except the Farmers' Bulletins and others specially designated as publications of the office of Experiment Stations. As a rule, bulletins issued by some State other than that in which the applicant resides can not be had in quantity, but may often be had in numbers sufficient to supply the members of the advisory committee.

GENERAL ON CORN.

The Nebraska Corn Book, Department of Public Instruction, Lincoln, Nebr.

Studies of Corn and Its Uses, Illinois Agricultural College Extension Bulletin, Urbana, Ill.

Corn Study, South Dakota Agricultural College Bulletin, Vol. II, No. 2.

Corn Growing, Farmers' Bulletin 199, U. S. Department of Agriculture.

The production of good seed corn, Farmers' Bulletin 229, U. S. Department of Agriculture.

Corn Culture in the South, Farmers' Bulletin 81, U. S. Department of Agriculture.

Food Value of Corn and Corn Products, Farmers' Bulletin 298, U. S. Department of Agriculture.

SEED-CORN SELECTION.

Bulletin 116, Agricultural Experiment Station, Kingston, R. I.

Bulletin 122, Agricultural Experiment Station, Lexington, Ky.

Agricultural College Extension Bulletin 1, Vol. II, Columbus, Ohio.

Agricultural and Mechanical College Bulletin 2, Teachers' Series, Stillwater, Okla.

Farmers' Bulletins 229 and 253, U. S. Department of Agriculture.

SEED-CORN TESTING.

Special Bulletin 47, Agricultural Experiment Station, East Lansing, Mich.

Agricultural College Extension Bulletin 7, Vol. II, Columbus, Ohio.

Agricultural and Mechincal College Bulletin 2, Teachers' Series, Stillwater, Okla.

Farmers' Bulletins 229 and 253, U. S. Department of Agriculture.

TIME AND METHODS OF PLANTING.

Bulletins 55, 65, Agricultural Experiment Station, Experiment, Ga.

Bulletin 147, Agricultural Experiment Station, Manhattan, Kans.

Bulletin 104, Agricultural Experiment Station, Clemson College, S. C.

Bulletin 134, Agricultural Experiment Station, Auburn, Ala.

See also the general bulletins in first list.

FERTILIZERS AND HOW TO APPLY THEM.

Farmers Bulletins 44, 192, U. S. Department of Agriculture.

CULTIVATION.

See first list.

CORN HARVESTING METHODS AND MACHINERY.

Farmers' Bulletins 303, 313, U. S. Department of Agriculture.

CORN PLAT MEMORANDUM BOOK.

G. I. Christie, Lafayette, Ind.

CORN JUDGING.

See first list and state score card.

USES OF CORN FOR LIVE STOCK.

Bulletin 102, Agricultural Experiment Station, Urbana, Ill.
Farmers' Bulletins 22 and 32, U. S. Department of Agriculture.

USES OF CORN FOR FOOD.

Farmers Bulletins 249, 298, U. S. Department of Agriculture.

BREAD-MAKING CONTESTS AND RECIPES.

Nebraska Corn Book, Department of Public Instruction, Lincoln, Nebr.
Agricultural College Extension Bulletin 10, Vol. IV., Columbus, Ohio.
Farmers' Bulletin 112, U. S. Department of Agriculture.

MILK AND BUTTER TESTS AT HOME.

Farmers' Bulletins 63, 131, 241, U. S. Department of Agriculture.
Agricultural College Extension Bulletin 4, Vol. I, Columbus, Ohio.
Agricultural College Extension Dairy Lessons, 1, 2, 3, 4, etc., University of Illinois, Urbana, Ill.
Testing Milk on the Farm (Form 10), University of Illinois, Urbana, Ill.

COTTON GROWING AND JUDGING.

Bulletins 6, 98, University of Georgia, Athens, Ga.
Farmers' Bulletin 217, 285, and 302, U. S. Department of Agriculture.

POTATO GROWING.

Farmers' Bulletin 35, U. S. Department of Agriculture.

STRAWBERRIES.

Farmers' Bulletin 198, U. S. Department of Agriculture.

JUDGING CATTLE.

Agricultural College Extension Bulletin 9, Vol. II, and Bulletin 2, Vol. V, Columbus, Ohio, (and official score card and rules).

JUDGING HOGS.

Bulletin 98, University of Georgia, Athens, Ga.

POULTRY RAISING.

Agricultural College Extension Bulletins 1, 2, 3, etc., Corvallis, Oreg.

Bulletin 98, University of Georgia, Athens, Ga.

Farmers' Bulletins 64, 200, 287, 355, and 357, U. S. Department of Agriculture.

STUDY OF USEFUL BIRDS.

Agricultural College Extension Bulletin 10, Vol. IV, Columbus, Ohio.

Farmers' Bulletin 54, U. S. Department of Agriculture.

STUDY OF WEEDS.

Agricultural College Extension Bulletin 1, Vol. V, Columbus, Ohio.

Farmers' Bulletins 28, and 188, U. S. Department of Agriculture.

RURAL SCHOOL IMPROVEMENT.

Circular of Information No. 6, Bureau of Education, Washington, D. C.

Some Problems of the Rural Common School, Yearbook reprint 1905, U. S. Department of Agriculture.

AGRICULTURE IN RURAL SCHOOLS.

Agricultural Leaflets, Department of Public Instruction, Lincoln, Nebr.

Bulletin 22, Series 7, University of Ohio, Columbus, Ohio.

Bulletin 1, University of Minnesota, Minneapolis, Minn.

Bulletin 1, vol. 7, Oklahoma Agricultural and Mechanical College, Stillwater, Okla.

The Teaching of Agriculture in the Rural Common Schools, Circular 60, Office of Experiment Stations, Washington, D. C.

Secondary Education in Agriculture in the United States, Circular 91, Office of Experiment Stations, Washington, D. C.

SCHOOL GROUND IMPROVEMENT.

Tree Planting, Farmers' Bulletin 134, U. S. Department of Agriculture.

Annual Flowering Plants, Farmers' Bulletin 195, U. S. Department of Agriculture.

The School Garden, Farmers' Bulletin 218, U. S. Department of Agriculture.

IMPROVING FARM BUILDINGS AND GROUNDS.

Practical Suggestions for Farm Buildings, Farmers' Bulletin 126, U. S. Department of Agriculture.

Modern Conveniences for the Farm Home, Farmers' Bulletin 270, U. S. Department of Agriculture.

Beautifying the Home Grounds, Farmers' Bulletin 185, U. S. Department of Agriculture.

The Home Fruit Garden, Farmers' Bulletin 154, U. S. Department of Agriculture.

The Home Vegetable Garden, Farmers' Bulletin 255, U. S. Department of Agriculture.

THE STUDY, HANDLING, AND REPAIR OF FARM MACHINERY.

How to Run Farm Machinery (Form 15), Easy Illustrated Lessons in the Care and Repair of Plows, Mowers, Binders, and Gasoline Engines; How to Mix and Use Concrete, Lay Tile, and Splice Ropes; University of Illinois, Urbana, Ill.

The Repair of Farm Equipment, Farmers' Bulletin 347, U. S. Department of Agriculture.

PLANS FOR JUNIOR AGRICULTURAL CLUBS.

Ohio University Bulletin 10, Series 8, Columbus, Ohio.

Ohio University Bulletin 22, Series 7, Columbus, Ohio.

The Winnebagoes, 1903, County Superintendent O. J. Kern, Rockford, Ill.

The Country School and the Country Child, County Superintendent O. J. Kern, Rockford, Ill.

Nebraska Boys' and Girls' Associations, University Bulletin, Lincoln, Nebr.

The Nebraska Corn Book, Department of Public Instruction, Lincoln, Nebr.

Boys' Agricultural Club Bulletin, County Superintendent Jessie Field, Clarinda, Iowa.

Bulletin 98, University of Georgia, Athens, Ga.

Mississippi School Boys' Experiment Club, Agricultural College, Miss.

Bulletin 1, Vol. 7, Agricultural and Mechanical College, Stillwater, Okla.

The Grout Farm Encampment, University of Illinois, Urbana, Ill.

Vocational Possibilities in Country Schools, County Superintendent E. M. Rapp, Reading, Pa.

Developing the American Farm Boy, University of Illinois, Urbana, Ill.

Statistics of junior agricultural clubs thus far reported.

State	No. of counties	Counties organized	Approximate membership	Under the auspices of—	Objects
Alabama	67	6	300	Commissioner of Agriculture, Agricultural College, U. S. Department of Agriculture.	Corn.
Arkansas	77	50	3,000	Superintendent of public instruction, Agricultural College, U. S. Department of Agriculture.	Corn.
Delaware	3	1	(*a*)	State Corn Growers' Association.	Corn.
Florida	45	1	2 0	Mrs. Kirk Monroe	Birds.
Georgia	137	9	*b* 350	Agricultural College, U. S. Department of Agriculture.	Corn, cotton, live stock.
Illinois	102	2	*b* 1,100	County superintendents, College of Agriculture.	Corn, bread making.
Indiana	92	45	*b* 5,000	Superintendents of agricultural extension and farmers' institutes.	Corn, wheat, potatoes, bread, sewing.
Iowa	98	(*a*)	4,400	County superintendents, Agricultural College.	Corn, potatoes, flowers, sewing, cooking.
Kentucky	119	10	(*a*)	Commissioner of Agriculture.	Corn.
Louisiana	59	14	1,110	Superintendent of Agricultural Schools, U. S. Department of Agriculture.	Corn.
Maine	16	(*a*)	*c* 600	College of Agriculture, state superintendent of public instruction.	Gardening, school improvement.
Massachusetts	14	(*a*)	620	Agricultural College, North Adams State Normal School.	Corn, potatoes, gardening.

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a Not reported.

b Many others compete who are not club members.

c The membership of the "School Improvement League" includes all public schools.

Statistics of junior agricultural clubs thus far reported.

State	No. of counties	Counties organized	Approximate membership	Under the auspices of—	Objects
Michigan	83	6	1,500	Michigan Corn Growers' Association, U. S. Department of Agriculture.	Corn.
Minnesota	84	28	(*a b*)	College of Agriculture, Department of Public Instruction.	Corn.
Mississippi	76	30	6,000	Commissioner of Agriculture, U. S. Department of Agriculture.	Corn, cotton, home culture.
Nebraska	91	59	25,000	College of Agriculture, superintendent of public instruction.	Corn, sewing, cooking.
New York	61	(*a*)	75,000	State College of Agriculture.	Corn, potatoes, fruit, poultry, domestic art.
North Carolina	95	9	350	U. S. Department of Agriculture.	Corn.
North Dakota	45	20	5,000	State Agricultural College	Corn, potatoes, strawberries.
Ohio	88	(*a*)	5,000	Extension Department, State University.	Corn, domestic art.
Oklahoma	75	40	2,030	State Agricultural College. U. S. Department of Agriculture.	Corn, cotton, wheat, domestic art.
Oregon	33	(*a*)	100	State Agricultural College	Poultry.
Pennsylvania	67	1	2,000	County Superintendent E M. Rapp.	Corn, bread making.
South Carolina	41	7	300	Commissioner of Agriculture, state superintendent of education, U. S Department of Agriculture.	Corn.
Tennessee	96	4	800	Public school teachers	Corn experiments, school improvement.
Texas	132	41	*b*1,700	Texas Farmers' Congress, U. S. Department of Agriculture.	Corn.
Virginia	100	11	2,500	State superintendent, U. S. Department of Agriculture.	Corn, domestic art.
Washington	36	1	200	State Agricultural College	Wheat, potatoes, school grounds.
Total	2,132	305	144,170		

a Not reported.

b Many others compete who are not club members.

The foregoing statistics of the junior agricultural club movement were secured by correspondence with agricultural college men who have been instrumental in forwarding the movement, with state superintendents of public instruction, and with county superintendents of schools and others. While the figures show that a large number of boys and girls are organized into such clubs, it is almost certain that the number is much larger than is shown in the table. This conclusion is drawn from the fact that in some states where such work has been carried on for several years practically no figures indicating the extent of the movement could be secured. The table is therefore intended more as an indication of the nature and scope of the movement than as a complete record of its status at the present time.

"HOW TO INTEREST BOYS AND GIRLS ON THE FARM."

By Mrs. J. A. Gullickson.

(Before Worth County Farmers' Institute.)

In connection with farm life there is no more vital problem than that relating to the best means of promoting the welfare of the young folks on the farm. This should be a matter of much concern to every rural inhabitant and indeed to every inhabitant of our land who values the future of the rural population which really means the future of the nation. How to make farm life attractive to the young folks and thereby induce them to remain on the farm is a problem that occupies the minds of thinking men at present. If this is to be accomplished, much relating to farm life must undergo a decided change as under present conditions the rural communities are constantly losing a large per cent of their best young men and women. The young people of today it seems to me are a much more favored lot than those of even a score years back. Their conditions are I think easier as well as pleasanter, and their social and educational advantages are far better. I think if the young people of pioneer days could have looked in upon the scenes and conditions existing in our farm homes and their surroundings today, they would have pronounced them all that could be desired, so great is the change that has taken place since then. Yet, I believe I am right when I say there is more discontent amongst the young people of the rural population now than there ever was in the history of the nation. Our country is not the only one in which these conditions exist. There seems to be a condition of social unrest throughout the entire civilized world. I think that one thing our young people would profit by being taught is to appreciate the blessings at hand; to be taught to be content with and grateful for the improvements already made and at the same time strive for further improvement.

For a number of years thousands of the best families in rural communities have deserted the farms and flocked into towns and cities until at present from 60 to 65 per cent of the entire population is centered in cities and towns. It is estimated that unless these city tendencies are stopped and conditions reversed this nation will have ceased to export food stuffs inside 20 years. It is a very alarming state of affairs and one that is just as detrimental to the towns and cities as it is to the country. Every one knows the cause. In a great many instances the reason for leaving the old farm home has been a desire for better educational facilities for the young. This is not strange considering the great difference in the educational facilities in the country and in the cities. And just as long as the educational system of the country continues inferior to that of the city so long will this stream of humanity which, as a rule, is the cream of the rural population, continue to pour into these centers. To be sure our rural schools have been greatly improved but the work that has been done so far is simply mending up and improving the system first established.

I hope to see the time when farm boys and girls will have the opportunity to get, not only common branches, but also a high school course without leaving home. It seems to me to be an erroneous plan that takes a child away from home at the age when the average child finishes the common branches.

This rush to the city has become one of the greatest social and economic evils of our times. Hundreds of young men and women have resulted in ruined lives, who, had they remained on the farm might have become useful, prosperous and honorable citizens. How to stem this tide is a very serious as well as difficult problem and one in which the farmers more perhaps than any other class should be deeply interested.

Lack of educational advantages is not the only factor that has been at work among young folks of the farms. Isolation has been a cause of much of this desertion, but in all of the older settled communities this factor is now less potent. Too long working hours can safely be set down as one cause. In cities the labor unions take care of these matters until some of them have gotten things down so fine it seems almost like all pay and no time. There should be a limit even to good things. Reasonably short hours are an excellent thing provided the leisure time is well spent. But I fear this is often times not the case in towns and cities where necessity compels them to keep a long array of saloons, permit drug stores, blind pigs, (some of which are not so very blind either,) club rooms, etc., etc., to maintain the prosperity of the place, of course. And do you know that scores of young men from the farms get their start on the down grade in these very places.

But back to my subject: Labor on the farm is not organized. I don't know why this is so unless it is because it seems to be the one place where the laboring class are able to get things their own way without organizing. Farm labor is said to be monotonous and a drudgery. I don't see where the monotony of it comes in unless its in the farmers' kitchen. Every change in seasons brings about a corresponding change in farm operations which should do away with monotony. As for drudgery there always has been and still is a great deal of that. Not because the farmer as a class is too greedy to permit himself his family, or hired help relaxation from labor but because the income from farm labor has been so small as to compell him to keep long hours. The farmers in the past have been too busy working to take much time to think. Less work and more thought is what we need in the future; this is necessary if the farmer values his own and the future generations welfare. In justice to himself, his family and his hired help if there is any the farmer should aim to shorten the length of the working day sufficiently to allow from one to two hours per day, according to the season, to be spent in rest, reading or recreation as may be desired. I think this would very materially aid in making farm life more attractive to the young and old alike.

I believe there is no one factor that tends more strongly to cause discontent with rural life in young folks than lack of recreation. Recreation is a necessity to young folks and not to allow them the proper time for it is a crime against the young as the failure to do so is responsible for many evil results. We hear much about the evil of Sunday base ball, for instance, but how many have stopped to think that the reason the boys play on Sunday is because they are not given any other time in which to play. It may be that some parents are willing to let their boys have a day off occasionally but this will not help matters much unless there is an understanding amongst the farmers of the entire community so as to give the boys a chance to organize. It is perfectly right, as I see it, that farm boys should play ball. It is equally right that the farmers' girls should play basket ball if they choose. I do not understand that it is the game that is objectionable. There are perhaps a few people who contend that the farm boy or girl is not in need of such games as they get sufficient exercise at their work, but this I think is too short-sighted a view to be worthy of consideration. It is the farmers' own fault if their boys play Sunday base ball. First because perhaps they haven't taught them to be God fearing, God obedient and God loving enough to resist from doing that which God has commanded them not to do even if there does seem to be some excuse for so doing. Secondly because they are not given the proper time in which to play. Give the boys a chance to play ball on week days occasionally and Sunday base ball will cease as it certainly is a disgrace to any Christian community.

Many of you have read the article on work and play for the farm boy in Wallace's Farmer for Dec. 24. It describes the work of the Y. M. C. A. in some rural districts. Its work is of a religious, educational, social and physical character. A part of the educational work is along agricultural lines. The religious work is carried on by means of bible classes, some for old and some for young men and are in the charge of trained leaders. This training is also done by the association. The association also furnishes a leader called the secretary for each.

His salary is paid by the county at large. These men are college boys who have originally come from the farms. This association realizes the need of recreation for the farm boy and takes steps to provide it. What is true of the farm boys in this respect is equally true of farm girls. There are so many ways in which the young folks can get recreation and mental improvement if only the farmers will realize the need of it and work together so as to allow the necessary as well as proper time for it. The old fashioned spelling school even might be made to furnish much amusement and benefit. It seems to me that no rural community should be without some sort of a literary society where social and educational facilities should be combined. Works of history, travel and current events should make very interesting matter for such an organization. What the rural communities are in need of is leaders. It is to be hoped that in the near future farm conditions will become so attractive that many of the young men and women who are fortunate enough to get college training will return to the farm instead of settling in town and cities as is now the custom.

In this way the now lacking leadership will be provided.

I do not think there is much danger of this matter of recreation being overdone if the parents will work in with the young folks, as they will then have a chance to not only keep it in control, but also to influence the young in their choice of amusement. To be sure we have young folks who are nearly all sport. They seem to be what is commonly called pleasure mad, fun intoxicated. That is a bad condition and usually leads to evil. I do not refer to such but to the average industrious, ambitious boy or girl to which class the majority of farm boys and girls belong. And I believe the salvation of many at least of these so-called sport lies or is to be found in better social conditions. I believe many of them might in this way be controlled and led into better ways. Let us not cease to be our brother's keeper. Whether the boy or girl is your son or your daughter or someone else's son or daughter should make no difference. You are in duty bound to the same responsibility; that is, to bear with their short comings and to do all within your power to promote their welfare. Many parents take a very unjust position in regard to their neighbor's children which can not fail to work very injuriously to the welfare of all concerned. There is a very homely picture in my mind which I think exactly illustrates the attitude of many parents towards other parents, children. You have all seen, I have no doubt, a cow with a small calf at her side. She is very tender and watchful of it, but if there happens to be another calf near by just as small and weak as her own she will not hesitate at the first opportunity to send it wallowing in the mud. A great many human parents exhibit this same animal nature and is one of the greatest hindrances to the social welfare of a community. It is well to remember that one cannot throw mud without first soiling one's own hands and that it is absolutely impossible to injure anothers' reputation without first degrading one's own character. We all value our reputation but we should all value our character infinitely more for reputation is what we are said or thought to be while character is what we really are.

If we wish our boys and girls to be content with their position we must also teach them the dignity of farm labor. They must be taught to know that the boys operating the manure wagon or a riding plow is in every respect the equal of the boy behind the counter and his chances often-times much better. There is no more honorable occupation than that of agriculture. The young need to have this idea impressed upon their minds from youth. They must also be taught to love the work by getting them interested in it. Give the girls their flower beds and gardens to plant and tend under your direction at first. Give the boys their own patches of potatoes, corn or any crop you think best. Encourage them to study and investigate and in this connection provide them with the necessary reading matter to help them understand. It is a wonderful study this study of the Creator's works and I believe if we make use of our opportunities and exert ourselves to do so, we can teach our children to love God through His works more easily than in any other way. And thus one of the chief aims of our lives would be accomplished. Don't fail also to give the boys and girls a fair share as much as you can afford of these extra earnings. It will help wonderfully to encourage them and if you teach them the proper use and care of money it will be no loss to you.

We folks do not expect that all our young folks should remain on the farm. Indeed this would not even be well. The farmer must also be a man of affairs. He must interest himself in questions of politics and in all problems of national importance. The rural communities must continue to furnish men and women to fill public offices and all offices of trust. What the nation needs is more honest men to fill its places of trust. These will very largely be filled from rural ranks. Such has been the case in the past and it will continue to be so in the future. The growing generation should be taught that honor is more valuable than gain; they should be taught the evil of selfishness and greed that dominates so many of the public men at present; they should be taught that by serving God and man faithfully, they also serve themselves best.

What our boys and girls grow to be and what degree of usefulness they attain depends almost entirely upon the influence they are under at home. Oftentimes we discover traits in our children's characters that surprise and annoy us and we cannot understand how they came there, when perhaps, they are only the results of our own "silent influences." (I sometimes think "unconscious influences" would be a better term.)

Napoleon said the greatest need of France was good mothers. What was true of France then is and always will be true of this and every other nation. Our children are as plastic clay to be molded by us into the images we desire. Let our ideals be high and true and let us mold lovingly and carefully.

THE FUTURE RURAL SCHOOL.

BY C. E. AKERS.

(Before Madison County Farmers' Institute.)

At present there is a widespread discussion of two or three very important questions relating to the rural schools, while it also affects the city school to a more or less degree. The course of study in our system of modern education will be seriously affected by it. In the past most educators did not regard the elementary school as a proper place to fit our boys and girls for the duties of life. They held that the function of the elementary school is to give only the beginnings of a cultural education, and it was not until the past few years that we find them looking kindly to the new order of things.

John Mason Taylor says: "The object of education is fullness of life, health, vigor, joy, and efficiency." E. S. Martin, in the Success Magazine of July, 1908, says: "The chief end of parents and schools is to train children in wisdom and knowledge, that they may be able to take care of themselves." If these men are right, as we believe they are, education should be as nearly universal as possible. Do you know of a more pitiable picture than that of a man or woman who cannot make their living?

The fixed course of study, which compels all pupils to pursue the same studies, regardless of likes and dislikes, talent or no talent, life plan or no life plan, has kept large numbers from obtaining an education.

The modern idea is to fit the educational plan to the individual instead of the individual to the educational plan. If this is adhered to we shall educate the largest number. Ready-made clothes are much cheaper, but they do not always fit. A first-class tailor can "fit" a very bad figure. This same principle applies to education.

It is a very grave error to frame a course of study on the hypothesis that every pupil will go forward to study the products of the intellectual life, regardless of the basis of his own economic support.

We need to be impressed with this statement, that the country school system affects more people directly and indirectly than do the educational systems of towns and cities. The course of study is less adapted to the needs of these children than to the city children. The conditions are such that they receive the poorest instruction.

What can be done to better these conditions? It is estimated that in many states 85 per cent of the children now in the one-room schools of the country never pass beyond the boundaries of the home district, so far as school training is concerned. Surely here is an educational problem worthy of the most careful consideration.

But before we take up the consideration of the course of study, let us take up a question that is of vital interest to the rural patron. This is the consolidation of the rural schools. The consolidated school will make possible a course of study suited to the needs of country life. There will come a study of the child and its environment, and in this environment will be found educational material of the highest practical utility and cultural value as well.

By consolidation of schools is meant the uniting of two, three or more small and weak schools into one that shall be large enough in point of numbers to be interesting, and strong enough in the way of money to afford a comfortable building, one or more teachers, and reasonable facilities for work. It also means that outlying territory with but few children shall be combined with a nearby school that is strong, rather than be organized into a weak independent district. In its fullest sense it means the uniting of all the schools of a township into one or more so located as to be most accessible, though not necessarily at the geographic center.

Consolidation, either in full or in part, means the transportation of a portion of the pupils, and this is one of the problems. It is generally accomplished in covered wagons, artificially warmed, holding fifteen to twenty children, and driven by reliable men under contract and bonds as to regularity and good behavior. At first thought this would seem expensive, but experience has shown that this is not the case, for it is cheaper to transport a few children than to establish a school for them. This is because a wagon is cheaper than a schoolhouse, horses are cheaper than fuel, and drivers cost less than school teachers.

Consolidation also means, where small districts already exist, some changes in buildings. These changes are sometimes effected by moving together two or more of the little old school buildings, or by adding a portion to one, thus making a two or three-room schoolhouse. In other instances new buildings are erected. All these ways are open. A makeshift seems often best at first until the plan is in full operation, when a permanent building is erected in due time. Where an expensive permanent building is built at first and a graded school established, the cost of this better school more than swallows up the saving from consolidation, and the public mind is sometimes confused and even misled as to the real source of increased expense.

The chief claim of the free public school system is that it is offering equal opportunities to all. There is, however, a startling discrepancy between claim and reality. Equal opportunity means equal lengths of school year; it now ranges from six to nine months. It means equal material equipment; it varies now from the most ancient, most poorly constructed, most uncomfortable single room schoolhouse in the remotest district to the handsomest, best constructed, most completely furnished, most comfortable modern building, in the most accessible location. It means equal supervision; supervision now varies from the single visitation of the county superintendent to the closest daily sympathetic aid of the expert supervisor. It means equal teaching ability; this now ranges from absolute incompetency to the highest and most skillful professional proficiency. It means equal facilities for the grades; in the district school there is one teacher in one room with from five to eight grades, teaching from twenty to thirty-five classes; in the town and city schools and in many consolidated schools each grade is provided with a teacher. Equal opportunity means equal advantages in every respect.

The chief cause of this diversity in opportunity is indifference. Somehow the people have not realized that better things are possible. With the township broken up into small districts, with a small attendance, it is simply out of the question to provide the best educational advantages. And it is not a financial question; even with the best material equipment, and the finest teaching ability, the small attendance and the limited community advantages would make it impossible for the small school to accomplish what schools in larger centers accomplish. Under the best conditions directors find it very difficult to secure good teachers for these small schools, and they find it impossible to keep these filled with competent, experienced men and women. As a matter of fact, there is a tendency on the part of patrons and directors to minimize the importance of these small rural schools, and to employ for them cheap, inexperienced teachers. And they become mere practice schools, or mere stepping stones to other callings.

From the above facts, then, we must decide that the best advantages can be found only in large centers, and that consolidation furnishes the only real solution to the problem.

Consolidation has passed the experimental stage. It was first operative in Quincy, Mass., in 1874, and since that time "more than 65 per cent of the townships have found it necessary or advantageous to close and consolidate some schools."

In 1893 Superintendent Seymour Rockwell wrote: "For eighteen years we have had the best attendance from transported children; no more sickness among them and no accidents. The children like the plan exceedingly well. We saved the townships at least $600 a year."

From this and other centers it has spread, until it is in operation to a greater or less extent in more than twenty states.

In Iowa there are about eighty-four schools that have been closed and now transport their pupils. During the past year the average cost per pupil transported at public expense was $18.75.

The State Commissioner of Ohio briefly summarizes the advantages as follows:

It brings into the school pupils who would not otherwise enjoy its advantages.

It insures a much better average daily attendance of pupils and greatly reduces the number of cases of tardiness and truancy.

It gives an opportunity for a better classification of the schools and proper grading of pupils.

It encourages supervision and gives the superintendent a much more favorable chance for thorough inspection of the work of the lower grades.

It limits the field of work for each teacher and gives an opportunity for a more thorough preparation.

It gives fewer classes to each teacher and allows longer recitation periods.

It gives the boys and girls of the rural schools the benefit of such special branches as music, drawing, agriculture and manual training, under a special teacher employed by the board of education.

It tends to prevent difficulties which often arise on the way to and from school and to protect the health and morals of the children.

Schools can be administered more economically. Better equipment in the way of apparatus and library for the different grades can be provided for less money.

The children have the benefit of better buildings and of modern conveniences in the way of ventilation and sanitary arrangements.

Better janitor services can be secured.

It helps to solve the difficult problem for boards of education, where the enumeration in several districts is exceedingly small and new buildings are needed.

It secures the employment, retention and personal influence of better teachers.

It adds the stimulating influences of larger classes, with resulting enthusiasm and generous rivalry.

It affords the broader companionship and culture that comes from association.

And, finally, it serves to bring the citizens of the township into closer relationship and to awaken a deeper interest in the public schools.

These facts should convince the most skeptical. Having secured the larger and better school, we are in a better position to make for the boys and girls a course of study that shall be of real value to them.

The course of study will naturally be framed with reference to their environment, and will include such subjects as will fit them for an industrial, a commercial or an agricultural career.

The first six years of school life should be given unreservedly to the fundamentals of a general education as expressed in the rudiments of knowledge and of hand skill; that in the seventh and eighth years vocational training and liberal training should be correlated; that between the two, after the sixth year of the course, there will be permitted a constantly varying amount of time and energy, as local conditions may warrant, but that the vocational studies shall be pursued side by side with studies that lead to a liberal education.

Assuming that the course of study of the first six years has contained its fair proportion of manual work, the seventh and eighth years will lay added emphasis upon hand skill. With this hand work there will be offered related lessons in English, geography, history, physics, arithmetic and drawing. The demands of industrial life, and not a traditional school course, will determine the nature of the shop work. Since in any occupation which the boys and girls would follow, eight hours would be required, six hours of instruction each day is none too long a time for them in school—the program of study to be so arranged by alternating theory and practice as to avoid the work becoming fatiguing.

On the academic side, the subjects in the order of their importance will be English, mathematics, science, history and geography. English will include the topics of literature, reading, composition, grammar, spelling, and penmanship. Mathematics will include arithmetic, algebra and geometry. Science will include elementary physics, with emphasis on mechanincs, and electricity, and elementary chemistry. History will go hand in hand with geography, with emphasis on the social and industrial development of the United States. United States history and civics, industrial history and economics.

All study will be under direction in the school room, and recitations will be mainly for the purpose of instruction and training in method of study, and will not be for mere quizzing. Related subjects will be correlated and grouped under one main subject in order to unify the work to the highest degree.

Warren says: "The teaching of agriculture is but a part of the great movement in industrial training. To those who are not familiar with the nature of agriculture teaching it may seem like a trade subject, but it is not primarily a trade subject. Nearly everyone is interested in growing plants and animals, and there are some fundamental principles of this growth that every boy and girl should have an opportunity to learn, for the educational training and intelligent interest in life that this knowledge brings."

The impetus given to the introduction of manual training in the schools of the United States during recent years has been little short of phenomenal. No school system making any pretentions to completeness can now consistently ignore the claims of manual training to being an integral part of the curriculum. So widespread has the recognition of these claims become that many of the largest school systems in the country have not only introduced hand work as a part of the regular class instruction in all the elementary grades, but extensive and specially equipped buildings have been erected for manual training in the high schools.

These radical changes in teaching in schools equipped for industrial training will have a healthy reaction on the whole elementary school system, from the lowest grade to the highest. There will be more attention to the essentials, more concrete application of principles, an awakening of teachers to the capabilities of their pupils, and clearer insight into the possibilities of directing their lives aright. There will be a vitalization of all the elementary schools. Those pupils who are so fortunate as to possess the real desire for knowledge for the love of knowledge, and are able to satisfy this desire, which leads to what the world calls culture, will reap as rich benefits as do those who from choice or force of circumstances are denied the liberal education.

What industrial education means to the elementary schools may be summed up as follows:

A more careful grouping of children with reference to their capabilities and proclivities.

A more sane and democratic arrangement of courses of study.

A new unit in the school system—viz., the vocational school.

A more cordial feeling of inter-responsibility between liberal and industrial training.

A closer unification of all the work of the elementary course.

A longer school day with longer and fewer periods.

Better teaching of subjects by careful distinction between the essential and non-essential.

And lastly, an awakening and clearer insight of teachers into the possibilities of their work.

The best preparation for the youth must strive to place him at the work for which he is most apt and at which he is likely to do well. Imperial Germany and republican Switzerland have both by virtue of their industrial training and through their teachers succeeded in sorting out boys and girls for the vocations to which they seem best fitted, Democracy, it is said, should offer every individual an opportunity to put forth his best efforts. Then indeed should the people of our rural communities inaugurate this modern progressive educational and training movement.

THE FARMERS' GARDEN.

BY MRS. WM. HULL.

(Before The Poweshiek County Farmers' Institute.)

Speaking of gardens one is reminded that our first account of agriculture was a garden. In the garden referred to we have a good example to follow if we never reach its high ideal. When we get agriculture taught in our rural schools, as it should be, then the garden will receive the notice and attention which should be accorded it. In all lines of activity agriculture is found prominently forging to the front, and markedly so during the last few years. Why is this so? Because the splendid work being done by the state agricultural college is beginning to bear fruit.

The first step in raising a good garden is the proper preparation of the seed bed. The next important step is the selection of good seed. How are we to know the seeds are good? First, by raising standard crops; by proper breeding and harvesting and care of seed; second, when the former plan is not possible, by dealing with a reliable seed man. It is as important to have seed come true to name as it is to have them grow. I am sorry to say that a good many otherwise sensible people are led astray by the gaudy picture on the cartoon and order "things" that "look nice" without any regard for its adapability to soil or climate. To get the best results, one should plant seed that will mature in the climate where planted. Before planting, the seed bed should be in good shape. It should be loose and mellow so the small seed will germinate naturally. Good seed put in soil in an unfit condition will never give good results. The best of seed, planted under the most favorable conditions and in the best of soil, will amount to nothing worth while without proper care.

I have often heard people say: "Oh, I never have luck, like you," and "we do so like garden truck." In raising a garden there is no such thing as luck. If one waits on the small chance of being favored by luck I am afraid their garden will be minus much of the "truck" found just over the fence in the garden tended by industry, thrift and know how. It is work—continual work—that produces dividends in the garden and not luck.

The farmer could, and some of them do, raise their living on a small plot of ground, including small fruit and vegetables that a day laborer, office man or clerk spends his wages for.

A garden properly planned and tended is not only a source of comfort but is a profit as well. If the products of the garden had to be purchased the farm crops would have to be figured closer to make the necessary margin of profit.

But, let me say, do not depend on some one, or some seed man, for your seed. When you have good seed acquire the habit of saving from the best you have. When sowing peas or beans do not pick them over until they get unfit for use. Pick out the strongest and finest and let the whole crop ripen, and when dry pick and put away. By following this method you are almost certain to have seed that will grow and the decided advantage of knowing they will produce true to name.

A result that naturally follows the practice of saving for seed only the last on the vines is the weakening of the variety and in a few years will run out altogether . When you hear a person talking about corn, potatoes or any other farm product "running out," you may set it down as a foregone conclusion that mighty little attention has been given to the selection of seed.

With proper attention to cultivation and care in the selection of seed one can improve any variety of garden or field crops.

"HOW CAN WE IMPROVE OUR ROADS?"

BY [illegible]

(Before Worth County Farmers' Institute.)

If you expect me to solve this question submitted by your program committee, you will be sadly disappointed, I can assure you from the start.

For some fifty years, more or less, this problem has worried the farmers in this western country as much as any other one thing with which they have come in contact, and yet the solution seems to be as far off as ever. The laws have been changed back and forth from time to time in the hope that our country roads might improve, but legislative enactments seem to be unable to effect the desired object; something else is required to build permanent highways. That many improvements have been made all these years our roads have been worked, especially as to bridges and impassable places, must be cheerfully admitted; but I don't think to be much in the wrong in stating that yet we have not a road in the whole county where anything like a load can be hauled any distance at all seasons of the year.

During half of the year, and at a time the farmers have the least use of them, being busy in the meadows and fields, our roads as a rule are in fine shape, and if the King drag is diligently used—according to law—after heavy showers, automobiles even can travel with speed and comfort in all directions without getting into trouble. If we could manage it so that all our hauling could be done between the first of May and the first of October, not much fault could be found with our country roads. But as a matter of fact our heaviest hauling comes in the other half of the year, and then we often find the roads impassable by any kind of vehicle. A road that is not passable 365 days in the year is no road at all—only a makeshift.

But how can we improve our roads and make them passable all the time is the question for us to answer. Having expended labor and money and traveled them for, lo, these many years, in fine weather and foul you will no doubt readily agree with me, that it is a very difficult problem to solve.

Theoretically it seems very simple. It is thus: If we want good roads we have to build them. But practically it is different. We have been building year after year, and still we have no roads to speak of. We have at last learned one thing—or at least ought to have learned it—that good roads cannot be constructed from any material that may be handiest to get at. Our rich black loam is unsurpassed for raising crops of all kinds, but very deficient for road building.

In constructing highways—as well as most anything else—three things are necessary: Money, labor and material. I might add a fourth which is equally as necessary—if not more so—and that is brains. I am afraid we have been trying to build roads without the last item too long, but then, we have the roads accordingly.

A railroad corporation would not think of starting the construction of a railway without first consulting and employing competent engineers to make careful surveys and calculation. In laying out a public highway with us the only requirement in the way of engineering is to be able to see straight from one section corner to another. If for one reason or another the old settlers established public highways between two objective points along the lines of least resistance, we always have a board of supervisors willing to remedy those defects from earlier days.

As to the cost of building public highways, that ought not to cut much figure with us. We can surely afford to travel on paved streets and macadamized roads through the length and breadth of the whole country, when we with complaisance can spend all of four hundred million dollars in digging a big ditch thousands of miles from home, in a part of our hemisphere where the chief occupation of the inhabitants is killing one another, and which, if ever completed won't benefit us as much as a ten dollar culvert in some wet place through a highway—we who spend a hundred million dollars every year in building and maintaining machines of death and destruction—otherwise called a navy, that no one even expects or wishes shall ever be of any benefit to the nation—other than to deprive the labor market of some of the surplus of its best material and to show off in foreign waters how big and strong we are.

How would it be to turn both the war and navy department loose on our prairies for a few years and set them to work at full pay to earn their salaries in building roads for the country? That would be putting them to some use. In their present vocation they are of no use to the country whatever—only to consume what others are earning. The old Romans did so 2,500 years ago. Their armies constructed highways leading into Rome that are marvels of perfectness to this day.

Even if we took the hundred million dollars which we gratuitously donate to the sugar trust every year and applied it on our public highways we would not need to wallow in the mud much longer—not to mention all the other trusts we are paying tribute to.

But these things are not to be. We are paying out millions upon millions every year absolutely without any value received and I presume we will continue to do so as long as we live. I even have a suspicion that we have been paying out lots of good money to have our public highways improved without getting adequate returns. And here we have no one but ourselves to blame. We have been doing too much patchwork without any system to it—scraping in a few yards of dirt here and hauling a few loads there temporarily to bridge over bad places.

We might take it for granted that we have both funds and labor in plenty to build all the good roads that we need. But in order to do that, we must have the material. And we also have that, and, in abundance, if we only go to work and use it. I don't think there is a township in the county, but where some good gravel beds are found, where the material can be got for little or no cost. In my township there is a piece of highway, about a quarter of a mile long, that contains enough good gravel to put every road in half of the county in prime condition for ages to come, if properly applied. But in order to get permanently good roads we must adopt the same principle the railroads are following: First the grade is built from any material on hand. (That is what we have been doing all the time, and let it go at that.) The railroad is only half built when the first grade is finished. On roads where the traffic is heavy a layer of crushed rock a foot or more in thickness is applied, and on top of that a coating of clean, good gravel is spread in which the ties are imbedded. And in most cases this ballast has to be bought, and hauled hundreds of miles. The result is a roadbed that will last for ages, with only the minimum cost of keeping in repair. Not before we go at it in a similar way will our main traveled roads materially improve.

For practical purposes we might divide our roads into two classes—primary and secondary. By a primary road I mean the main traveled highway that leads to a market place. By rough estimate I should judge that less than one-third of our roads can be properly placed in this class. With a county map before us we find a road from the Mitchell county line goes straight west through Manly, and from there to Hanlontown, Fertile and west. About through the center of the county we find another passing through Bolan, Kensett and Joice. Further north we have the old Saint Ansgar road to Northwood and continuing west from here, known as the Bristol road. These make three main roads east and west, extending through the whole county. North and south we have the road coming from Albert Lea, through Northwood, Kensett and Manly. Other roads east and west of this might properly be put in the first class, as well as shorter roads in any direction through the different townships.

Now I hold that every rod of these main traveled highways ought to be properly ballasted or macadamized so that any one would know, that by getting on to one side of these roads, he could safely get to market at all times and at any season of the year.

All of you will agree when considering the matter that a large percentage of our public highways has much the character of private roads, used as an outlet to get on to the main road by only a few. To keep these in passable shape, therefore, ought mainly to be the concern of those that use them. But the building and maintaining of the primary roads are the concern of all. Now I have claimed we have the requisites to build as good roads as any county can boast of—if we only go at it in the right way.

At present the township is made the unit for building and caring for our roads, leaving it in the hands of the trustees, who appoint one or more supervisors with a cash tax to work from. Formerly, as you know, we had road districts, generally coinciding with the school districts, presided over by a road boss elected by the people. He would call on his neighbors to work the roads. Whether the present system is an improvement on the old one is not for us to decide, but I think you will sustain me if I say, that our roads have not materially improved.

Since our main traveled highways pass through the whole county, or in most cases through more than one township I should be inclined to favor the county as the unit, in place of the township, with a competent officer as supervisor who should devote all his time to the work. Besides being cheaper I think we could get much better service. We now have a county surveyor, who I understand, is not over-loaded with official business. Why not add "County Road Supervisor" to his title and give him something to do?

Again we might profit by the example of large railroad corporations.

Thousands of miles are in daily operation and new lines constantly being built. But there is one man—only one—at the head of the engineering department—the chief engineer. He directs what is to be done on the whole system. Thus a road supervisor would have under his control all the public highways in the county and would be better able to put system to the work and do what was most needed better than a whole corps of petty officers who do not pretend to work in harmony or under any definite system, and who generally have their hands full of their own business, or may not comprehend what is needed as well as one who is trained in that line and has made it a special study. But this is probably going beyond the limits of my subject. I simply throw out the thoughts as they enter my mind, and you can take or reject them as you please.

"According to statute" we now have mainly to look to the township trustees for any improvements we might desire in the highways of the township. The trustees on their part feel relieved when they are able to look after the roads in a limited territory, being as the case might be, the whole, one-half or one-fourth of the township. It would only be natural to suppose that those "supervisors" are not always experts in road building. It might also happen that some of them live on side lines and would be apt to overlook the main roads in favor of branches that are of no particular benefit to the public in general. I do not know whether the trustees have authority to command the supervisors what to do, when and where. Am inclined to think no instructions are given. Thus the supervisor is at liberty to work the roads or let it be, as he chooses. Under such conditions it is again natural that he attends to his private business first. When he finds time to look after the roads, they might not be in condition to be worked on account of wet weather or he is unable to secure help, or they might be on the point of freezing up in a shape just about impossible for anybody to pass. We have the result.

Under present condition, in order to get some system to the work, let each township decide to lay the bulk of the work on the main traveled roads and finish a certain piece each year by a good solid layer of gravel on top. There is sufficient revenue raised in each township to complete one or two miles of road each year. How many years would it take, working on that principle, before the main roads of the township would be made good roads?

Another thing in this connection should not be overlooked. When a road is once properly constructed it requires very little to keep it up. A load of gravel here and there where it begins to cut, and the use of a road scraper or King drag now and then would do the work. Then you have a road that would last for centuries. Again let me repeat: If we want good roads we must build them.

I am about through, but before I sit down let me tell you how I found the roads in my native country a few years ago, when I went back there for a visit: I had occasion to travel some 50 miles or more in a stretch, up one valley and down another. Now I don't believe we have a public highway in the county with anything near the traffic that that road had to bear. About one-third of it was used to haul hundreds of thousands of tons of iron ore to the coast every year, besides all the other travel. Including some stops on the way, viewing the scenes of my childhood, it took about a week from one end to the other, in which time it drizzled and rained nearly every day. But a bicycle or auto-car could have skipped the whole distance without any difficulty whatever. It looked more like paved streets—only narrower—than anything we call roads here. The people over there, when they need a road, go to work and build it, and when once built, they have it forever.

They also have an original way of keeping their highways in repair in that country. The road is divided into stations of different lengths according to the amount of taxable property of each land owner. These stations were marked off by a square cut granite block, like a monument and planted by the roadside. Each stone was numbered and stated the length of the station to the next one. Some were only a few rods apart, while others might be as far as a quarter of a mile. Each station was assigned to a particular owner who had to keep it in good repair the whole year around and for ever. Now they have as long winters over there as we have here, and longer, too, and as a rule, several times as much snow. I inquired what they do with their roads then to make them passable. I was told that the different neighborhoods clubbed together, built a snowplow and took turns in driving over the allotted distance of road every morning if it was necessary.

Each district, what we might call a county, has a road inspector whose business it is to see that each landowner keeps his piece of road in prime condition.

Those main thoroughfares are called Royal roads (Kongsvei); and well they may. Any king ought to be proud to pass over such roads.

ROAD LEGISLATION.

BY L. B. PARSHALL.

(Before Jackson County Farmers' Institute.)

The subject assigned on the program is Road Legislation, but it seems best to use the limited time at our disposal in treating the Road Legislation of the last general assembly, and this subject we shall sub-divide into two parts, first, the legislation in the 33d general assembly which was actually accomplished, and second, and more important, the legislation which was proposed, which has not been enacted into law. It is hardly worth while to devote much time to the first part of the subject for those laws are on the statute book and open to your inspection.

However, we shall briefly give the scope of those new laws. First. An option is given (Chapter 95, Senate File 217), to any community in the state to build a permanent road out of public funds. This privilege is hedged about by conditions, thirteen in number, and is altogether a valuable statute. So if sixty-five percent of the electors in any township in this county so wish you can proceed to build a permanent road.

The second statute worthy of mention (chapter 96, Senate File 71) extends to township trustees and like township officials the privilege and right heretofore in doubt, (quoting the exact language of the statute) to destroy all obnoxious weeds or unnecessary brush on the highways, and to warn out labor in the same manner, as for repair on the highways. The right of trustees to warn out labor and clear up brush has heretofore been in doubt. As a part of this law ten noxious weeds are specifically mentioned and called to the attention of the trustees, viz: Canada thistles, cockle burr, smooth dock, sourdock, buck horn, wild parsnip, horse nettle, velvet weed and burdock.

Third, a privilege is extended (chapter 97, House File 265), to the board of supervisors, to levy an additional mill tax for road fund; conditional upon a majority petition, from any township wishing to lay upon itself the additional levy.

Fourth, (chapter 98, House File 5), enacts that the privileges of the old law allowing taxpayers to work out their road tax on the highway can upon a 65 per cent petition be obtained.

Fifth and last (chapter 101, Senate File 317), the farther use of the road drag was encouraged, and to a certain extent made mandatory. And among other things of this statute a price of fifty cents per mile was fixed for road dragging with the King drag. So much for what the last general assembly enacted into law, all of which we believe to be safe and sane road law.

ROAD IDEALS.

And now before entering into a consideration of the proposed legislation from which we expect so much, let us clear the deck, push things back and decide what in the premises is a reasonable expectation. This, our answer, is that we want better rounded up, better drained and smoother roads, and especially, each year we want a little permanent road over which on week days we can bowl along with a two-ton load to the market town and on Sunday we can "crank" the automobile, load in the family and go to church. Nor do we want all this right away, but we want to have at least, a little permanent road each year. We want to have the sensation of being started.

THE ROAD SITUATION IN IOWA.

Perhaps it will be just as well, next in order, to take a birds-eye view of the road situation in Iowa and decide "where we are at." We observe first, that we are, in Iowa, expending an immense sum of money for roads.

Governor Carroll, in his inaugural address, put it at $4,000,000 or $40,000 to the county. Our own county expends about $70,000 annually. We observe in the second place that the country roads of Iowa have, within the last twenty-five years, made no improvement worth mentioning; the same poor drainage; the same period of impassible roads in the spring, the same tearing up of smooth roads in the fall.

AN EXCEPTIONAL COUNTY.

It is possible that this arraignment is too sweeping, for during the last legislative session a representative from one of the interior counties expressed himself as well pleased with the operation of the present road law, stating that in his county the township levy only was devoted to repair work, while the county levy of one mill was entirely laid aside and used solely for permanent road building, that in this way their county roads had grown better yearly. But this case, so far as the speaker knows, is an isolated one. It remains true in a broad and general sense that the county roads are from year to year making no improvement.

FUNDS SHOULD BE USED EFFECTIVELY.

Now if this view be correct, if our county roads at the rate of expenditures are failing to improve, then there are in the nature of the case only two ways left by which an improvement may be brought about and by which our ideal may be obtained. One is to pay out more money on our highways, viz.: To expend more than $4,000,000 in the state and more than $70,000 in this county. The other way is to spend the money we do raise differently. This matter let us now look into.

ROAD FUNDS—HOW EXPENDED.

It is in no spirit of disparagement to the road officials of the state that we inquire whether our road funds are judiciously expended. Yet in this great affair it will not do to mince matters. The building and maintainance of roads and bridges call for men of special equipment. We shall not enumerate the qualifications but it is evident that in deciding for instance, the location of a highway, in deciding the question of highway drainage or in figuring out a gradient that would be permissible in a highway, and in like matters qualifications of no common order are in demand. Likewise when it comes to bridge work the men who have an independent judgment as to what constitutes a suitable superstructure, or what constitutes a suitable foundation or what constitutes a suitable and safe water space are rare indeed. One qualification especially deserves special mention. No man should be entrusted with the work of gradience and bridge construction who is incapable of using mathematical instruments, he should be able to set a theodolite and do other mathematical work. The great question, perhaps the greatest question which the legislature had to consider or has in the future to consider, is whether the state as such, is today equipped to expend its road funds wisely and effectively.

LEGISLATIVE SENTIMENT.

There was a feeling from the first in the 33d general assembly that our equipment for performing the road work of the state was not what it ought to be. This feeling was somewhat vague at first but later took definite form and towards the end of the session became quite pronounced. It was brought to the attention of the committee in a number of ways that a good order of engineering ability was demanded. For instance the average county twenty-four miles square, which contains 1,152 miles of highway, presents in the course of a year, about every sort of engineering problem, and that unless these problems were solved as they came up, the road work of the county could not be economically performed.

A BRIDGE INCIDENT.

An incident to illustrate the foregoing, which occurred a few years since in our own county, I shall now go out of my way to relate. It seems from the records, that the ice and timber which were floating at flood time, in one of the larger streams in the western part of this county, had formed a gorge which moved irresistably down the stream bed until it made an impact against a large county bridge, carrying such bridge at one end down stream, nearly off its base, where it hung suspended on one corner badly twisted out of plane. Immediately after the accident described the county officials met together and let the contract to replace the bridge in position for a sum of money well in excess of $1,000. The "bridge gang" consisting of five men with gin poles and tackle blocks, repaired to the scene of the disaster and on the second day finished replacing the bridge properly on its abutments, at an expense all told not exceeding twenty-five dollars.

LOCATING HIGHWAYS.

Likewise instances in plenty were brought to the attention of the committee touching costly mistakes in the matter of locating roads. This also was as well illustrated by an incident in our own county. In the township of Monmouth in the southwest corner of this county was an ancient road following a ridge which had gained residence by proscription. This road was practically level, having no gradient exceeding two per cent, that is, had no hill rising over two feet to the hundred. Yet this road was thrown by the board of supervisors over onto the sectional lines where a number of hills were encountered, each having a ten per cent grade. Incidentally the change permanently discommoded a wide tract of country and permanentally injured a certain market town. The change described would never have made headway against accurate engineering measurements, and this county, in the meantime, would have been saved thousands of dollars in unnecessary and unproductive work. It can never be a good road where at present located.

CONCRETE BRIDGES.

At the present time we are entering in the industrial world upon an era of "Portland Cement." I may be pardoned for stopping at this point to explain that parapet walls in concrete bridges are expected to furnish, in a properly constructed bridge, one-half the strength of the arch. It is also material to this discussion for me to add that within 20 miles of the city of Bellevue a county concrete bridge has been erected in which the parapet walls were practically disconnected from the main bridge structure, being united only by some trivial three-fourths inch rods, whereas the concrete should have been poured into the forms, which would have united imperishably the parapet walls with the main structural arch. I am willing to go on record as saying that whether any certain county bridge made of concrete shall last and endure five years or say five hundred years is a matter which depends upon the fact whether each hour during its construction by the contractor, it was under the inspection of an inspector who knew how to inspect.

WASHOUTS.

Before leaving the subject of bridges we may mention another source of country loss which is to a large degree unnecessary. We refer to washouts. Not many years since in a single summer freshet in the eastern half of this county, $10,000 worth of bridges were washed away and destroyed. Now as to part of these bridges and perhaps as to all of them if the throat of these bridges through which the water passes had been made the subject of computation by a competent engineer who could have figured out the volume of water caused by a four-inch rain fall, falling in the space of six hours, there is every reason to believe that those bridges, each and severally, would have remained on their abuttments.

Moral—If these incidents, largely drawn from the experience of our own county, are similar to the experience of the other 98 counties in the state, it is evident that something is terribly wrong.

THE REMEDY.

We are now about to single out two specific measures by either of which we believe the great ends in view would be accomplished. We shall mention first the recommendation of his excellency, Beryl F. Carroll, governor of the state, which was presented in the inaugural address, and that recommendation was that each county board of supervisors throughout the state should have at its elbow a trained, competent engineer to advise it in all branches of its construction work, and who, in order not to multiply offices and beget confusion, should retain the title of county surveyor. It will not be deemed immodest in the speaker if he shall remind his coworkers in the Farmers' Institute that he has for the last fourteen years almost yearly advocated the identical measure proposed by Mr. Carroll, which is another illustration I may explain, of what in the almost forgotten past, Artemus Ward used to say about himself and Abraham Lincoln that "great minds run in the same channel."

The second measure which was formally brought to the attention of the committee was a bill by Senator Larrabee of Fort Dodge, the commanding feature of which was that it should be mandatory on the board of supervisors to appoint, with an adequate salary, a qualified, experienced civil engineer. It is observable that both these great measures of road reform would put at the disposal of the county the necessary technical knowledge and experience. The main difference between the Carrol measure and the Larrabee measure being that in the Carroll measure the engineer would be elected while in the Larrabee bill the engineer would be appointed by the board. The salary generally spoken of in connection with the office was $1,500 per year, which in this county you will note, would be about two per cent of the $70,000 usually expended on said work. It was also urged in support of both measures that the salary would be largely paid by savings in other directions. It was set forth with more or less detail that a county engineer would be required to perform much technical work which at the present time devolves upon the board of supervisors, and which appears in the county records under the title of Committee work. I may add in this connection that the Committee work performed during the year 1909 in Jackson county, as recently reported to your speaker by Auditor Pain, reached the sum of $1,920.40.

THE COUNTY PATRIMONY.

In closing I wish to submit some figures and estimates.

An average county in Iowa is 24 miles square. Across this county are 24 roads ranging north and south each 24 miles long, making 576 miles of highway. Across the county running east and west are 24 roads each 24 miles long, making 576 miles, which, added to the north and south roads makes 1,152 miles to the county. One mile of highway is 320 rods long and 4 rods wide and contains 1,280 square rods which divided by 160 shows 8 acres of land in a mile of road. The 1,152 miles of road in the county at 8 acres per mile indicates there are 9,216 acres of land in the roads of the county. This land at $100 per acre comes to $921,600.

The bridges in this county number 1,600. Of these 1,600 perhaps one hundred bridges which span the larger rivers of the county are worth $6,000 each and reach the value of $600,000, 1,500 smaller bridges average in value $500 each—$750,000—reaching a total value in bridges of $1,350,000.

This bridge valuation of $1,350,000 added to road lands, value of $921,600, shows a total of $2,271,600.

In administering this estate of $200,000, we have quite an array of officers. First, we have in this county at least five supervisors. Again each township has three trustees and one road superintendent, four officials in all to the township, which in the 18 townships in this county would reach the total of 72 township officials. This number, added to the five county officials, make 79 road officers.

The annual routine work of these 79 officials is to keep 1,152 miles of highway in a rounded-up smooth condition.

Now we beg to ask whether these 79 officials in the administering this great trust need or do not need some central authority who can always be found, who can act in the capacity of consulting engineer. There is no greater question before the next general assembly than "what will it do with the recommendation of Gov. Carroll?" Shall the country road have a capable trained head?

WHAT CONSTITUTES A GOOD FARMER.

By Fred F. Beebee.

(Before Harrison County Farmers' Institute.)

To be a good farmer means more than we, as a farming people are apt to think. The farmer, who by hard and incessant toil for a long period of years, and aided by wife and children, has accumulated a comfortable living, is generally thought to be a good and successful farmer. Whereas it may be in his haste to attain wealth he has sacrificed many of the essentials of a good farmer, or those things to which he and his family are entitled. He has had no time, and allowed his family no time, to cultivate their minds and fill their brains with knowledge that will prove a source of delight in future years, and help to tide them over many an hour that would otherwise be lonely and unprofitable. The farmer in the twentieth century must be progressive along all lines. He must keep abreast of his competitors in maintaining the fertility of his soil, in the choice and use of farm machinery, in the growing of grain for seed, or obtaining the very best with strong germinating qualities. The fact as to whether he farms large areas or small, does not indicate particularly as to his proficiency as a farmer. His acres may be few and yet by his attention to details he may be one of the best of farmers. In fact I believe that the owners of small farms, are as a rule, better farmers, and as good citizens as those owning large estates.

In speaking of farming tools I believe that as many err in buying too many, as in buying too few. We often find on farms, tools of every kind and make and tools not needed. Often they are standing about the fields or in out of the way places, uncovered and uncared for, and are soon gone to the bow wows. A farmer on perhaps a rented farm who has been fairly prosperous and feeding one car of steers followed by 60 to 100 hogs, will go to his dealer and open up the subject of gasoline engines, feed grinders, etc., and before he is aware he has bought both, and perhaps an engine and grinder of capacity sufficient to grind feed for six or eight cars of cattle. Neither of these machines were needed and then because it will fit in so well, he buys a feed cooker (which to him is a nuisance).

He perhaps is milking two or three cows, and his dealer, located maybe in his own town, or it may be a Chicago catalog house have impressed upon his mind the great value of a cream separator, and he gets out the big catalogue and sends in the cash for the "very best separator ever made" to aid his women folks in caring for 5 or 6 crocks of milk per day, whereas it will take longer each day for the women to part and clean the separator than to care for the milk in the old way. Then they see in the big book a picture of a machine to grind bones and oyster shells for the chickens. They have nearly twenty and as they have a good grinder for meal they send for the bone cutter and calculate the returns will make it right when the "hens begin to lay."

"Well, they see how cheap things are in Chicago and in order to get the premiums in unusable furniture, etc., they buy lots of goods that they may need in future years (but never do) and the big firm has caught another sucker. Of course when you need money to pay for the hall in which the farmers' institute is held, or to build the new church the catalog house will head the list with a large contribution. A state is no more advanced than its people, and as farmers are an important portion of the state, they must be good citizens, and use in a sensible business like manner their perogatives as citizens. Because our fathers were members of the republican or democratic parties is no good reason why we should follow these or any other party through the slime and iniquity wherever they would lead us. as voters our good farmers should consider well before they deposit their ballots. Their children and their neighbor's children are of far greater value than a party name, ·and any party in league with the whiskey element either openly or implied. should not receive the vote of the good farmer. We also believe the good farmer will consider his wife as intelligent, and as good a judge of what is best in line of laws for our nation's government, as are ignorant negroes. and low grade white men, and he will vote to work to give women the ballot. wherewith to help defend her home and her family.

A good farmer will believe in good roads and be willing to put forth considerable effort to make and keep roads in good condition. We think he will disagree with our Governor Carroll (who is quoted in late papers as favoring narrow roads), and stand out for good wide roads with the space not needed for traffic sown in blue grass and all the weeds mowed in June and August of every year. He will also demand good country schools held in good buildings situated in pleasant grounds. Good farmers will not allow noxious weeds to grow and seed on their farms. and will expect the trustees of their township to see that careless neighbors live up to the laws in and for such cases made and provided.

In choosing the products of his farm we think he will follow mixed farming, with just a little leaning toward some one favorite line of which he will make a specialty. His live stock will be of good quality, and his herds headed by well-bred males. His grain and hay will be fed on the place. and his fertilizer distributed over his farm by means of the manure spreader. If he feeds cattle. or keeps a dairy he will surely raise some alfalfa and have a silo. His house pleasantly situated on a fine lawn, will be convenient and as commodious as his means will allow, there will be a large well lighted living room. with plenty of easy chairs, and solid plain furniture not too good for every day use. Good books on various topics, magazines (that do not advertise liquors and humbugs). will be in evidence, also good farm papers, and the county papers will all be found on the table for the entertainment of himself and family. The good farmer will be an active and interested member of some farmers' club, and will be sure to attend with his family the annual session of the Farmers' Institute and take part in the discussions, even if sometimes he may find himself on the small side of a big question. Hospitality will be one of the characteristics of his home, and he will share with friends or strangers his daily fare, however plain, without apology. The good farmer will be a regular attendant and willing helper at the country church and will always be found in the ranks of those who are striving to better the condition of the human family.

CEMENT WORK ON THE FARM.

By A. S. Worth.

(Before Harrison County Farmers' Institute.)

The beginning of the twentieth century has witnessed rapid strides in the use of cement and concrete in a thousand and one different lines of construction work. Nor is it difficult to find the cause. The scarcity of timber and lumber is the principal cause. Then if you compare the lasting qualities of the two materials, cement is far the cheaper. The U. S. is fast losing her forest primeval. Therefore we must find a substitute, and cement and concrete is fast taking the place of lumber as a building material.

Nor is it a new thing as many might suppose. The Romans used it as far back as 500 B. C., both in building of roadways and in structures, the very word itself is of latin origin. In Spain and some other countries of the Old World are found abundant evidences of the ancient use cement in forms that have survived the ravages of time and the elements. So it is readily seen that the growing use of cement today is nothing new, but simply a return to the first principles.

Thus we see the lasting qualities of properly constructed concrete is very evident. Of late it has been most extensively used in the cities. But we can see no reason why the farmer cannot use it to great advantage to himself for it is much cheaper than either brick or stone and it requires but little skill to use it, the principle tools for making and applying it is a shovel and a trowel. Buildings and walls made of cement are practically indestructable. They are fire-proof, cyclone proof, and they don't require painting every year or so. Besides it gives one the impression of firmness and stability. Some of the farm places we have noticed have cement walks and steps leading to the house, and cement caves or outside cellars. It shows thrift and good taste.

If you will build some cement walks leading out to the front gate and some also from the back door to the lot gate, so that you will have something solid to stamp your feet on during the rainy spell, you may find a little solid comfort, and then, too, it may save you a good many scoldings for carrying that mud into the house. And I really think the wife will think more of you, and then she will take pride in keeping those walks scrubbed clean. And that will be an incentive to build a chicken-tight fence around the yard and then she will have a chance she has long looked for to plant some flowers in the front yard without their being scratched out by those tormented chickens. Come break away from that old rut you have fallen into and clean up around the place and you will find new life.

What a pleasure in coming from the muddy feed lot to the house yard and find a nice green lawn, good cement walks, nice and clean, and go to the cement cave with the milk, not one of those you have to go down a long line of steps but just walk right straight into. That is the cement cave. Now you can have one of that kind and it is a good investment. It just takes a little time, not so much money. Pick a time of the year when the rush of the farm work is not so pressing, and tell neighbor Jones you want him to help you a few days. Go to the sand bank or gravel pit and haul a few loads of gravel. Be careful to use gravel that is free from dirt or clay. Most any hard substance will do. Old broken crocks or brickbats, so they are broken fine enough to go inside the forms. And that is a good way to get rid of some of that old rubbbish.

There are many ways and places that cement can be used on the farm to great advantage. It can be utilized in the construction of foundations for buildings, barn floors, especially in the cow barns, feeding pens for hogs. Even a hog is inclined to be clean if you give him a chance. A feeding floor can be swept clean or flushed once a day or better after each meal, and prevent disease in your herd. Sanitation means a great deal to the farmer in feeding stock.

Then your silo can be made entirely of cement by digging a hole in the ground, and cement the bottom and the walls. This can be in one end of the barn or a shed can be built over it, giving you a perfect silo. Among other things is well curbs, root cellars, ice houses, windmill anchor posts—even fence posts. Water tanks can be made of cement and you will have one that will never leak. The sun and frost will not affect it if built right. I saw on Mr. Kelley's farm one that was constructed like a huge wash-bowl. He told me he commenced by hauling a few loads of sand in a pile where he wanted the tank to stand, then hollowed out the sand to the size he wanted the tank and commenced and plastered the sides to the thickness of about 6 inches. By making it round and flaring there is no danger of the frost doing any damage. This one has stood the test for several years without showing any signs of cracks or leaks.

A WOMAN'S REMARKABLE SUCCESS WITH POULTRY.

By Mrs. D. C. Johnson, Maxwell, Iowa.

"You asked me how and when I started in the poultry business. Well, I will tell you. When I first learned there was merit in the "old hen" it was way back in the latter part of the seventies. I was left a widow with three small children to support. When I began to realize the responsibility resting upon me, I cast about for something to do and found I could get work part of the time sewing, house cleaning and all sorts of drudgery, but not enough to pay my rent and insure me a living, so I took what little money my husband had left me and bought a house and eight acres of land, two cows, a few pigs and several dozen hens. This took all the money I had. I had nothing left to live on until I could realize something from my investment. Things had become desperate and many nights I went to bed hungry.

A Remarkable Hatch by Mrs. D. C. Johnson, **Maxwell**, Iowa.

"At last I went to the neighbors and told them I would do sewing, washing, or anything I could do and take in exchange flour, meat, lard, corn, oats, or anything they felt disposed to let me have for the table, or to feed my pigs and poultry. In this way I managed to get along for I could get all the work I could do. I put in extra hours at night when every one else was in bed. I tried to raise a large flock of chickens, and succeeded in doing so. Then I built a warm hen house from straw and poles, which was so warm that my hens laid all winter. I fed them cabbage, beets, turnips, squash, onions, for I knew to produce eggs in winter I would have to make conditions as near like those of the warmer months as possible. I also fed corn, oats and some small potatoes. I never let them out on cold days, and the result was by January I was getting enough eggs to pay all my living expenses and feed for my cows, pigs and poultry. Eggs were eighteen cents per dozen and corn only fifteen cents per bushel.

"There were no incubators in those days. If any one had hatched chickens by artificial methods they would have been arrested for witchcraft. There were no poultry journals published, the agricultural papers never said a word for old biddy (she wasn't worth mentioning); there were no fanciers to bring out new strains of superior quality, both for the meat and the egg production. You can readily see how I was handicapped. I had nothing to help me, but had to learn everything by practical experience, persistent effort and investigation, but after I once got started I lived as well and as independent as any one that lived on one hundred and sixty acres of land.

"After my second marriage there was a stringency in money matters, poor crops and hard times came and we were about to lose our home when my husband was taken sick. I then went into the poultry business in earnest, and made my first incubator. I would hatch about 5,000 chickens in one season (I do not think anything of hatching half that many in one day now). I began to improve my breeds and at last settled on the Barred Plymouth Rocks for meat production and Single Comb Brown Leghorns for egg production. At first, when my poultry brought me twenty-five dollars a month I thought I was doing well, but now my eggs, broilers and fowls that I sell for breeding purposes will bring me three hundred dollars a month, in the busy part of the season. Then I cannot fill nearly all my orders. After my success got into the papers, I would receive hundreds of letters from people interested in poultry, asking all sorts of questions. I tried to answer every on but found I could not do so, and conduct my business. So I had a book published, telling just what and how I went to work to obtain the best results. I had only a thousand published and these were sold in four months at $1.00 each. This money I gave to my boys to attend college, a good starter. Then I sent them what they needed from the sales of my eggs and poultry.

If I had only known then what I know now it would have saved me many tears and disappointments. There is big money in poultry if anyone will only attend to it as they would any other enterprise, but most people leave them to take care of themselves too much, then say there is no money in it. There is also pleasure connected with the poultry business. It isn't all drudgery. Neither is there a more healthful occupation than raising poultry.

POULTRY ON THE FARM.

(Paper read before the Louisa County Farmers' Institute.)

While the raising of poultry on the farm has become a matter of much interest to the farmer's wife, it is of equal importance to the farmer himself, as well as to his children.

In recent years a great change has taken place in the condition of affairs. Formerly we were compelled to accept very inferior prices for poultry and eggs compared with the advanced prices of today. Well can I remember some sixteen or seventeen years ago of taking to market twelve dozen eggs for which I realized $.60 (in trade) 5 cents per dozen. Today the same number of dozen would amount to $3.00 About this time (or perhaps a little later) we gratefully accepted 4 cents per lb. for chickens and 7 cents a pound for turkeys. How would such prices strike us now, when only last week Mr. G. R. Hall, one of Oakville's leading merchants, paid 13 cents per pound for chickens, and 18 cents a pound for turkeys. Surely at such prices all poultry raisers should feel encouraged to give more attention to so profitable a business. E. W. Philo informs us that we need entertain no fears that the poultry business will ever be overdone, for there is only about one person in one hundred who will devote enough thought and time to the work to make it a success. Many of you have read of late something about the Philo System.

This system is said to be especially valuable to the farmer as well as to the city or village fancier and is adapted to all climates, all breeds and all people. It is said that less than half the cost is required to handle the poultry business in this manner, but having had no actual experience myself in this new system I shall leave it as a point of discussion for those who are better acquainted with this modern method.

When keeping poultry by modern methods it is practicable to begin work at any time, but in the old way with a flock of 125 to 150 chickens I have had better success in waiting until the latter part of March to begin setting the hens. There is no question however, that the very early chicks command the highest price, yet the later hatched ones require less attention and by early fall have attained a large growth thereby demanding a high price. In raising poultry on the farm there are many things with which to contend. Early in the spring when the young chickens are very small, there frequently comes to the coops, unwelcome visitors in the form of the weasel, the skunk or the rat. These intruders are a terror to the flock and destroy the life of many a chick. A little later in the season other annoyances arise which menace the life of the young chickens. First, the almost invisible little mite makes its apearance in the chicken house and must be exterminated immediately by a thorough disinfectant, such as lime or crude carbolic acid, used upon the roosts and in the nests. No doubt some one is now saying, "That is an unnecessary annoyance, as cleanliness prevents the accumulation of any insects. However true, this may be, I have had more or less trouble every spring with the mite. Second, another hindrance to success is a disease called the "gapes" which invariably attacks the flock of young chickens after a spell of cold, damp weather.

Among people who raise poultry for profit the various breeds are divided into two classes, the utility breeds and the fancy breeds. The utility breeds are again divided into three classes, according to their weight—(the light, medium, and heavy). As an example of the light might be mentioned the White Leghorn; of the medium weight, the Plymouth Rock, Wyandotte and Rhode Island Reds, and an example of the heavy weight, the Langshan and the Brahmas.

The different breeds which I have raised at different times are the Plymouth Rock, the Black Minorcas, the Langshan, the Wyandotte, the Leghorn, and the Brahmas, and of all of these varieties, the Plymouth Rock has proven to be, in my opinion, the most satisfactory.

A few days ago there came to my notice a little poem published in "Successful Farming." This is the poem.

THE HEN.

Our poets may sing of the eagle,
Proud theme of the prolific pen,
Whose figure bold adorns silver and gold,
For the grasping clutches of men.

But away with your gush and palaver!
Let us get down to facts, and then
We'll give you some tho'ts about Wyandottes,
Or some other kind of a hen.

She hasn't the brilliant plumage
Of the tropical birds of fame,
Nor the peacock proud with screech so loud,
But she gets there just the same.

She hasn't the notes of the mocking bird,
Nor the oriole's song in May,
But sweeter than all from spring 'till fall,
Is her cackle to me any day.

It tells of food healthful and wholesome,
Of angel cake, custards and pies,
And if worthy some men, why not also the hen,
Of a mansion beyond the blue skies?

It tells of sure profit and income,
From her eggs with their yolk of gold,
And my Plymouth Rocks are far better than "stocks"
Or King Solomon's mines of old.

It is said from the sale of her products
We could cancel our national debts;
Then from every clime, in prose and in rhyme,
We'll proclaim that her son never sets.

—Frank F. Freligh.

While much might be said in regard to the necessary requisite of an up-to-date chicken house and many practical ideas might be given as to judicious feeding—time will not permit me to go into detail, but allow me to say that feeding chickens in winter is more puzzling than any other duty from the fact that more judgment is required to know the quantity of food to be given, the variety, etc. A safe rule to be followed has been suggested by one poultryman and that is—half as much as they will eat in the morning, nothing at noon and a full feed at night.

While turkeys are more difficult to raise they are nevertheless exceedingly profitable and it is worth our time to at least make an effort to raise a few—even though we make a complete failure some years as has been my experience the past year. I can give you no information concerning ducks and geese, but many who have raised them inform us that they are the easiest of all poultry to raise and manage, and are more profitable as the feathers command a good price which is an extra profit.

POULTRY FOR PROFIT.

By Mrs. Laura McKee.

(Read before the Poweshiek County Farmers Institute.)

For the beginner, I would say, read all the poultry journals and good books, or recognized authority, visit all your friends and neighbors, who have thoroughbred poultry, talk chicken until you think you know everything there is to know about chickens, and when you have settled the all-important question, that is, the kind which suits you and your locality best, you will find, when you get really in the business that up to the time your actual experience begins around the poultry houses that you have got but a little way into the real animus of a business that is growing in importance daily, and that has been studied for years by persons who are now ready to say that there is still much to learn.

But this advice I can give with considerable certainty: Begin with a small flock of the best you can procure, and when you are once in the business you will find it greatly to your advantage to study your birds—make friends of them—there is nothing more calculated to broaden your knowledge than an intimate acquaintance with your fowls. Study incubators, brooders, designs for houses and apparatus carefully, and above all, do not forget the feed problem. After you begin to like your pets, and like to take care of them, you have mastered the first lesson that spells success.

Gradually increase your flock each year, and construct buildings and improvements in accordance with the returns of the previous year's effort, and in three or four years you will have a flock of chickens that will yield you more profit on the investment than any other stock on the farm.

Not one farm poultry raiser in a hundred is a fancier, but what he or she wants is good, meaty stock and good layers. Meaty, good-looking, fast-growing stock is what the market poultry raiser wants. There is money in raising strictly fancy poultry, but not for all of us, since we have not the capital, nor the help that is required. Ninety-nine in every hundred will find more profit in producing good market stock and eggs. Do not forget the eggs. Breed for eggs, and sell your surplus stock.

My advice to beginners is to leave the production of strictly fancy stock to the other fellow and go after the immediate dollar by raising good stock and producing eggs. Poultry and eggs, even the commercial articles, are going higher in price year after year, and choice poultry and fresh eggs for the table are becoming almost a luxury, and there is no good argument why it should not be a good, paying business.

By producing stock and eggs you have something to sell for cash that is increasingly growing in demand every day. You put it into the market as soon as it is fit and get the money in your pocket.

Get good stock of some breed, and stick to it. A flock of chickens all one color looks 50 per cent better than a flock of all kinds and colors, and it costs no more to keep them. Breed from your very best market stocks and best layers, and keep your stock up to the top notch. Feed well, and make your birds comfortable and you will surely reap a profitable income from this branch of poultry culture.

The prices paid for fancy poultry are almost beyond the belief of the average farmer. When Mr. Northup, of New York, received one thousand dollars for a Black Minorca we thought he had climbed to the top of the ladder in chicken perfection, but since then we have learned that instead of being at the top he had only ascended a few rounds, and was distanced by Mr. Kellerstrass, of St. Louis, who sold a pen of White Orpingtons for the neat and attractive sum of seven thousand five hundred dollars—the price of a small Iowa farm.

But only a few breeders are skillful enough to obtain such prices, if they do have as good birds. These figures are only given to show what is possible with poultry—but remember, it takes money and time to bring a flock to this point.

The farmer has greater facilities for profitable poultry keeping than the city or town man. A field, or a small lot, adjoining the poultry house, can be sown to wheat, barley and oats, and as soon as it is ripe the young chickens can be turned into the field, and they will save the farmer the trouble of harvesting the crop or feeding the chicks. Late in the fall, if he will sow this same field to rye, it will furnish the chickens green feed until cold, freezing weather. Then, in the spring, your hens are out on your field of rye securing green feed, which they need for best results.

One of the important items in profitable poultry is how to get eggs in winter, or how to induce the hens to lay when eggs are worth so much money. This is a very easy thing to accomplish, if we are willing to give the proper care. Hens that are noted egg-producers transmit this desired quality to their offspring. It therefore follows that if we want a good laying strain, we must either build one of our own or buy one. If we have hens that have a record for winter egg production, and give them the proper care, they will lay. Whenever you see a flock of well-cared-for-poultry, you will hear no complaint about the egg basket.

Work brings its reward! You must have a love for poultry, or let the other fellow have them, for unless they are properly cared for they will not give the best results. Care and good judgment are what make poultry profitable.

Comparatively few farmers realize how profitable it is to keep a few hens that are well cared for. The old-fashioned farmer considers the hens as something for the women folks to look after and are not worthy the good man's time, or even his thought, and generally regarded them as a nuisance to have around. I'll admit they are, on some farms, for they grudge the hens a few feeds of corn in the winter, when everything is covered with snow and ice, and they positively refuse to clean out the hen house or take any pains to make the biddies comfortable, to say nothing about their happiness. Yet these same old fogies do not object to a fresh egg for breakfast or a fried or stewed chicken for dinner. Poultry journals tell us that where all the feed is bought hens will yield from 100 to 200 per cent profit yearly. Now, if this is true, why can't the farmer have as large a yield? They can! If they will only get rid of their old scrub stock. Breed up your flock. Get a few thoroughbred chickens, pen them in the breeding season, set only full-blood eggs, and in two or three years you will have a flock of chickens you will be proud of and that will more than repay you for the care you have given in producing it. Then let the farmer give them as good care as he does the rest of his stock, and I can assure you that you will have fresh eggs, winter and summer and a neat profit besides.

Raising poultry takes brains, energy and business judgment. These are essential and necessary to success. The poultry business, as an investment, requires the same careful business management as any other commercial enterprise. Give the poultry half a chance, and it will make every other branch of farming take a back seat when it comes to piling up the bank account.

THE FARMER AND HIS HENS.

By O. K. Whitlock, Strawberry Point, Iowa.

(Before Clayton County Farmers Institute.)

Most people who keep poultry believe they know all there is to be known about the business of rearing poultry. Many of them do know a great deal, but none of us know so much but what we may learn something of others who have made a success of the business. Almost anyone can set a hen, but not all of us can make her set if she does not want to, and fewer of us can raise all the chickens she hatches out. For the majority of us, the hen is the cheapest and most satisfactory incubator and brooder. When managed with wisdom and run to her full capacity, she is a strong competitor of the man-made machine. Have a good dry nest with plenty of soft straw or hay, then give the hen all the eggs she can cover well; this may be thirteen to seventeen, according to the size of the hen and the size of the eggs. Set as many hens at the same time as you can, and allow one hen to brood from twelve to fifteen chicks if the weather is cold; but in warmer weather it is not necessary for the hen to hover all the little chicks, for those that get cold will soon crawl under her wings, and if she is a careful bird and is given the proper care and the right coop she can easily take care of twenty-five chickens. I have found that hens with large broods, if given good care, will raise a larger per cent of their flock, than those with a few. Have a large dry coop for the hen and a run for the chicks, a part at least, of which is in the open air, for sunshine makes healthy chickens. It is very important that the chicks are properly fed. They require food in small quantities, but require that often. Heavy feeding often stunts young chicks and they never get over it. For the first twenty-four hours no food is necessary. Then give scraps of bread, oatmeal, cracked corn, chickfeed, etc., with sand and grit and plenty of fresh water. Many people are successful in hatching and raising chickens to the frying stage, then their interest flags, and the half-grown birds are neglected, underfed, crowded and pestered with lice. To produce good birds, they must be kept growing from the time they hatch until they are matured. It is the home stretch the last part of the race which counts. Most farmers regard the poultry business as something too trifling to merit their attention. It may surprise some of them to know that according to the twelfth census, there were raised in the United States poultry to the value of $137,000,000 and eggs to the value of $144,000,000 in 1899. In 1908, the poultry products of the country exceeded $500,000,000, equaling in value the nation's wheat crop. It may further surprise them to know that the value of the oats and potato crop in the United States in 1907 did not equal the value of the poultry products of that year, and that in 1899 the nations egg output was more than the gold and silver mined in any year for half a century. In 1900 the poultry and egg output was more than the world's annual production of either gold or silver in any year since the beginning of the gold and silver records. The Iowa hen leads the hens of the United States. Hens are more numerous and busier, for Iowa annually produces more eggs than any other state by 10,000,000 dozens. Iowa's eggs each year are worth twice as much as her wheat crop. Her hens are as valuable as the gold mines of California, for they produce as much wealth every year. But still there are same farmers who say it doesn't pay to raise hens. There is money in anything that is necessary for the comfort and well-being of the human family. The poultry industry on the farm, in most cases, pays the living expenses of the family. And then there are but few who do not enjoy eating eggs and poultry and the many excellent dishes prepared from them. Eggs are used for so many purposes that it is necessary for the supply to be constant. The farmer who says chickens do not pay, does so because he does not extend the proportionate time and brain in caring for his fowls that he does in caring for his other stock. He quickly discovers the reason when a cow fails to give her full quota of milk, because he observes her daily, knows what she needs, and the condition under which she is kept. The average farmer gives his chickens very little care whatever, and generally houses them in some little 8x10 out of the way building. To make poultry raising a success, we must see that the fowls are kept comfortable. Good housing, good breeding and good feeding go hand in hand in this business. In building a chicken house select a dry place, and if possible have it face the south, as sunlight and warmth are essential to the best success with poultry. In building this house use only the best of wood as it will be the cheapest in the long run. The size of the house may depend upon the number of fowls to be kept. The scratching shed, almost explains itself, and although cheap, costing but very little, no hen house is complete without it. The average farmer wants chickens for both eggs and meat, and there are several good varieties and breeds that can be classed as an all purpose fowl. Watch the young stock as it grows and note and keep track of the ones that make the fastest and most uniform growth. Those are the ones to breed from next year if the intention is to improve the flock from year to year. But, remember it is not always the handsomest hens that are the best layers. Therefore see that you breed from a stock that has a record for laying as well. Feeding is something we have all got to learn a good deal about. It is unprofitable to feed poultry and not get returns from the food and labor, but in most cases the fault is with the poultryman, not the fowls.

One must feed different kinds of food and change every few days, so as to afford a variety, such as wheat, oats, corn, barley, buckwheat, etc. There are many vegetables on the farm which are not salable and are not fit for the table, such as imperfect heads of cabbage, beets, carrots, small potatoes and turnips which will be relished by the fowls. Make your hens work for all they get to eat, by throwing their feed into chaff, straw, clover, hay, or shredded corn fodder, for it is the working hen that pays. Above all things keep your hen house clean. Almost all of the diseases of poultry are caused by carelessness and unsanitary surroundings. The farmer who cleans his hen house only once or twice a year invites disease among his flock. We can't blame hens for not laying, sometimes. Just to look into some of the nest boxes is enough to make a hen turn away in disgust. It takes a little more time and work to keep the nests clean, but it pays. Impure drinking water and filthy drinking vessels cause and spread more diseases than anything else. Keep the drinking vessels clean, and fill at least once a day with clean fresh water. Of course, in the raising of poultry, we all have more or less to contend with. A poultry raiser at a farmers' institute once gave his experience as follows: The poultry business is bounded on the north by roup and blood sucking vermin; on the east by dishonest and unreliable poultry breeders; on the south by weasels, cats, badgers and hawks. on the west by rainbow chasing incubator advertisements, and overdrawn statements in poultry journals.

We have read of Maud on a summer day,
Who raked, barefooted, the new-mown hay.
We have read of the maid in the early morn,
Who milked the cow with the crumpled horn.
And we've read the lays the poets sing,
Of the rustling corn and the flowers of Spring.
But of all the lays of tongue or pen,
There's naught like the lay of the farmer's hen.

"THE FARMER AND HIS BUSINESS SYSTEM."

By G. E. Bartholomew.

(Before Madison County Farmers' Institute.)

The failure of business men can as a rule be traced to three causes:

First,—Dishonesty.

Second,—Ill health or misfortune.

Third,—The lack of some system in his business.

The first two we are going eliminate as not applying to this audience, and present the third proposition insofar as it applies to the farmer in conducting his business from day to day, and thereby getting the best results from his investment and labor.

The first objection that will be raised is that the farmer has not sufficient business to justify any particular system in caring for his business; but let us see. As a rule the average man in business in a country town has from five to ten thousand dollars invested, and some as high as fifteen thousand, doing an average annual business of from fifteen to twenty thousand dollars.

The average farmer owning 160 acres of land valued at seventy-five dollars per acre has invested in land twelve thousand dollars, add to that, personal property sufficient to carry on this amount of farming, gives you five thousand dollars more, making a total investment of seventeen thousand dollars, which is considerable more than a great majority of the business investments in the country town, and I think you will concede that the man in business in town must have some system in conducting his affairs in order to make that business successful.

The average annual business of the farmer will probably amount to from five to ten thousand dollars, so that with an investment of seventeen thousand dollars and doing an annual business of nearly ten thousand dollars, it becomes absolutely necessary that the farmer, in order to get the greatest profit with the least effort from his farm, must have some system of accounting, and established methods of management, whereby he can know at all times the condition of his finances, which, with a comparison of results, will place him on an equal footing with the business men with whom he is dealing constantly, and he should be alive to the many possibilities of supply and demand of which he is the very foundation.

The first proposition is for the farmer to establish and maintain a high credit. If you will ask any farmer who is known to be successful in carrying on a large farm, he will tell you that it is absolutely necessary to borrow money, and to do this with profit your credit must be of the very best. If you would be wise, you would select a bank in whose officers you have the utmost confidence, go to that bank and place before them a true and correct statement of your resources and liabilities, so that they may know when you borrow money that you have sufficient property, either real or personal, to liquidate a debt when it becomes due. If you desire to borrow, go to the bank and inform them of your needs; the bank has your statement and knows whether or not your credit is good for the amount needed, give them your note for two, three or six months as you choose, and place the amount to your credit on a checking account in the bank. If you buy stock, grain, machinery or supplies of any kind, give in payment your check on the bank, this makes you a cash man no matter with whom you deal, and you are soon placed on the list of cash payers by all business men with whom you come in contact, and you in this way get the very best prices obtainable, and very often drop onto opportunities which you would otherwise not obtain if you did not pay cash, and let me say right here that whatever you owe, owe to your banker, and only one banker, and unless you tell it yourself, no one will ever know that you are indebted in any way, as your business with your banker is as confidential as your business with your doctor or your lawyer. But, you will say, "I can get money at a less rate of interest from my neighbor," and that may be true, but if you borrow fifty dollars from your neighbor Smith, fifty dollars from your neighbor Brown, and fifty dollars from your neighbor Johnson, it will be necessary that you give notes running not less than six months and generally a year; you are perhaps making one per cent on your interest charge, but do not forget that your neighbor Brown has gone to neighbor Smith and asked him whether your note is good and the same way with neighbor Johnson, and the three have found out that you owe each of them, and this creates a suspicion in the minds of these three neighbors that you owe a great many other men various amounts, many times magnified, and do not forget that your neighbor Smith, Brown and Johnson are not at all backward about telling these suspicions, and this has hurt your credit more in that vicinity than ten times the amount borrowed of your banker on a note which you can pay at any time you get the money and stop interest on any amount which you pay.

If you borrow what small sums you need from time to time from Tom, Dick and Harry, simply because you can get it cheap, you must not feel that your banker is under obligations to you to furnish you money in times of panic or stress, when you are unable to get it from anyone else. If you will be wise you would be very plain and outspoken with your banker and not try to conceal many little things that perhaps you would not want him to know, but at the same time if he did know he would not consider of much importance, and the chances are he knows anyway, as there is very little going on among the finances of a country town that the banker does not know about, and you would feather your own nest if you would make a confidant of him, and he be permitted to advise you and understand that you are depending upon him to carry you through when times are hard just as when they are good. While you perhaps think you are paying a comparatively high rate of interest, you are in the long run getting more than one hundred cents in advice, accommodation and good will for every dollar paid.

Let me caution you in this one thing—do not give your note promiscuously for things purchased from the merchant. If you buy a piece of machinery, groceries, dry goods, shoes or anything of that nature and have not the money to pay for it, go to your banker and borrow it and pay the merchant cash for your purchase. You lose the interest on the money that you borrow of the bank, but, as a rule, this is a very small amount, and you will make it up many times over in the prices you obtain from the merchant. Do not deceive yourself by thinking that you can buy as cheap and run a store bill which you do not pay oftener than once in six months, or, many times, once a year, as you can by paying cash at the time goods are purchased. If you would expect the merchant to give you a low price on goods purchased, it is only fair to him that you pay the money for those goods, so that he may be permitted to obtain an equally low price from the manufacturer by paying cash and getting what discounts are possible.

A promiscuous giving of notes for machinery and such things as that injures your credit more than many times the amount borrowed in one place. These notes, as a rule, find their way to the bank, and a good many times are not held in strict confidence by the person to whom they are given.

I could name several men who are conducting farms composed of from three to five hundred acres who do not owe one cent except to their banker; their credit is placed at the very highest point in the vicinity in which they live, and they pay cash by checking on the bank for everything they buy.

There is another advantage in paying for everything you purchase by your check on the bank, and that is, it not only gives you a receipt for the payment of the amount, but it makes a record for you which might prove of great benefit in making comparisons in subsequent years. By placing the proceeds of everything you sell to your credit in the bank you obtain a perfect record of your entire business transactions on your bank book, and should errors arise or bills be forgotten, this is the best, quickest and surest method of correcting the discrepancy. Records are the most important part of any system, no matter what the business or how large or small. Go to your druggist and purchase a small, alphabetically indexed blank book, which will cost you 25 cents, and there register under each day the many details of the business as they come along from time to time, such as the price of eggs on a certain day, or the yield of a certain piece of oats in a certain year, or the date of the birth of a certain colt, and the many other little things that might be of benefit to you as a comparison in after years. It will not take to exceed five minutes in any one evening, and if you cannot do it yourself, your wife, your son or your daughter would be very glad to lend a hand to the system, which is as much to their interest as your own to keep perfect.

Have another book, which you can purchase for another 25 cents, in which you charge your neighbor, Smith, with a day's work which you have loaned him, or credit your neighbor, Brown, with a day's work which he has loaned you; or perhaps you have sold to another neighbor some grain or other product which he is unable to pay for at the time, and over which there is many times a dispute. When the debt is paid, record it on the book, and you have your records complete.

Every farmer should take an inventory of his property, both real and personal, on a given day in each year; it matters not what day it is, just so it is the same day in each year. On that day make a list of everything you have, estimating the value as near market price as possible; include in this all bills and notes owing to you, with any cash you may have on hand and in the bank. Deduct from this all your debts and any notes you are owing, and you have your net worth. If you do this every year on the same day it gives you a correct record of whether you are making money or not, and how fast. An inventory is one of the most important parts of any man's business records and is the connecting link between the years of business as they come and go, and should be preserved as one of the important features of your business life.

A little time spent each day or evening in recording small transactions as they come along from day to day in books, which need not be expensive or elaborate, not only shows to the man his standing with the world, but makes it possible for him to ascertain at any time just how he stands financially. If he is making money he will know what portion of his work is giving him the most profit, and thereby be able to enlarge that part of his labors which will increase his profits most from year to year. If he is losing money he will be aware of the fact before he is compelled to liquidate his debts by a foreclosure upon what property he owns, and he will be informed of his true financial situation before any of his creditors. You know self-preservation is the first law of nature, and to be forewarned is to be forearmed, and, being first informed, he will be able to so carry on his business and cut out that portion which is losing him money that it will in time tide him over and bring him to success, or, perhaps, the absence of some system of knowing the condition of his business would have been the means of bringing on failure and final disaster. One of the secrets of the wonderful success of some of the large corporations is the minute system and the methods they use in making estimates of the probable loss or gain of some particular part of their business. You know it is a recorded fact that Philip D. Armour in the heighth of his career testified on the witness stand that all the profit he made on a beef was the hide, yet this small profit made Philip D. Armour one of the leading men in the packing business in which he was engaged, and a millionaire several times over, and this was all brought about by the inaugurating of a system by which Armour & Co. are able to ascertain and know at all times the cost of their goods, what they are required to charge in order to make a profit, and the financial condition of their business.

Another important feature for the farmer is the subject of a safe place to keep his valuable papers. If you have not a good, substantial safe in your home, go to your banker and rent a safety deposit box in his vault. If he has no safety deposit boxes, go to the hardware store and purchase a small tin box, which will cost you 75 cents; place your name on it and ask the banker to place it in his vault for safe keeping, which he will be very glad to do. Place all of your papers, such as deeds, insurance policies, abstracts, tax receipts and everything of value in this box; then you will know just where to look if you want some paper which perhaps has been in your possession a great many years and is of much value to you even if to no one else. A great deal of annoyance and embarrassment and many times loss has been caused by papers of one kind or another becoming lost or destroyed for lack of a proper place to keep such things.

Another proposition deals with the relation of the wife to the finances of the household. If you will place a sum of money in the bank to the credit of your wife and deliver to her the bank book with a check book and allow her to transact all of her business through the bank in her own name, you will have solved a problem which in many instances is not only complex, but very disagreeable and many times causes a great many heartaches and sorrow in the household. If it is your plan that the lady of the house is to receive all of the egg money or all of the chicken money or all of the milk money, whatever this might be, allow her to take the check, carry it to the bank herself, and place it to the credit of her own account, and if this is not sufficient, give the banker orders to transfer from your own account to her account on the first day of each month a sum sufficient to meet all of her expenses, whatever they might be. She will not squander the money, and you may feel confident that she will make it go as far, if not farther, than you will yourself, and at the same time she will have a fund which she can call her own and not be obliged to ask for every cent that she spends. At the same time it will give her an insight into the transaction of business, and should misfortune come, so that she will be called upon to transact the business of the farm alone, she will be acquainted with business methods and be informed as to what is expected of her in the transaction of ordinary business. Remember, she has worked as hard as you have to build up your good name and reputation, and whatever you have belongs to her as much as to yourself, and you owe it to her that she be given a free hand in using what, in her judgment, she needs, without being compelled to ask for every cent she receives and make an accounting of just how it is spent. Do you realize that this young lady, whom you led to the altar only a few short years ago, placed in your hands the most sacred thing on earth? She gave to you and your keeping her very existence, and with it the joy or grief which has come to you and of which she has been a part, and is entitled not only to her share of the many little pleasures that come and go, but should have free access to the finances of the family, without any questions being asked.

The next problem with which we are confronted is what to do with our boys and girls. James J. Hill says that the solution of the economics of this country is the keeping of the boy on the farm, and how are you going to do it? The first method is to give him to understand he has an interest in the business. Make an incentive for him to work, no matter what he gets, little or much. If he is young, make his salary per month or per year accordingly, but give him a salary. How would you like to get out and work month after month and get nothing for it except what you could eat and wear? I am reminded of a story, the language of which is not very beautiful, but the story applies so well that I cannot help but use it, and I know you will overlook the language:

A gentleman was passing along the road and found a young man about 14 years old hoeing potatoes in a field beside the road. The gentleman stopped, and, passing the time of day with the boy, said: "My young man, that is a pretty good job you are doing there. How much do you get for doing that work?" The boy looked up and answered: "Nothing if I do, and the devil if I don't.'

If I should pass your farm and find your boy hoeing potatoes and would ask him the same question, would he have to answer me in the same way? Fathers, get the confidence of your boys, give them a share in your business, no matter how small; you are responsible for their coming into the world, now play fair; give them an incentive to make men of themselves that you will be proud of. No greater joy can come to a father and mother after they have passed the age of activity than to be able to point the finger of pride to their boy, whom the people revere and honor as a successful and upright man.

Mothers, you also have a duty to perform in this great drama of life; it places on your shoulders the responsibility of your girls. They, too, should have a share in the business of the household, and feel that there is something farther ahead and higher up than the first young man that comes along and wants to marry them. Marriage is a noble thing and a sacred contract, and the ultimate result of natural events, but not until she attaines that age when she will make a good wife and mother.

Mothers, make companions of your girls; then if they get a letter from a young man they will not want to go and hide it before you see it. I have a baby at home, she is only 18 years old, but you will find letters lying all over our house addressed to her in the handwriting of some young man, some of the letters a week old and some a year old. She is not afraid to have her mother read those letters, nor her father either, and when she answers them she takes the answer to her mother to read. To have confidence in your girls give the girls confidence in you, and this is the mother's reward for days of toil and nights of anxiety and worry.

Fathers and mothers, make your children co-partners with you on the farm. If it is a part of your system it will give them an incentive to make an effort to be honorable men and women, and in this you will find the pleasure and satisfaction of your declining years, and place upon your rounded shoulders that golden wreath of joy which brings repose, happiness and peace.

Before closing I want to give you an extract from an address made by J. Adam Beede, congressman from Minnesota. The subject is "The New Woman."

This poem was given while Mr. Beede was giving a lecture at a convention in the western part of the state. A little girl, about three years old, came running down the aisle and found her way onto the platform, and as she reached the top of the steps Mr. Beede stopped, lifted the little tot in his arms, and gave this poem:

"THE NEW WOMAN."

She is only a little tot; three or four summers have touched her lips with wisdom and left the sunshine in her clustering hair. Her spirits are as blithe and buoyant as a bird; her thoughts as light and airy as the sky-blown thistledown. She clings to your hand in the morning and is eager for your homecoming when the shadows fall, being ofttimes found peeping through the panel of the gate, where her greeting is ingenious and sincere. She is the new woman with the world before her, and with her toys and playhouse she is waiting for the future, and you press her to your bosom while she waits. Yet a few years, and other haunts shall know her and other hearts be hers, and then, too, other cares may come. But though the home nest has been long deserted and many years have flown, she is still to you the little burst of sunshine and unbroken package of delight, while her baby words with beveled edges catch the ear; and though you are a century old, your heart is a hundred years young, and then you understand Him who said: "Suffer little children to come unto me, and forbid them not," for the best thing on earth is the little tot.

HOURS OF LABOR, WAGES, AND COST OF BOARD ON MINNESOTA FARMS.*

(U. S. Department of Agriculture, Farmers' Bulletin 366.)

In connection with an exhaustive study of the cost of producing farm crops and feeding and caring for live stock on Minnesota farms, statistical data have been collected regarding the hours of labor, the cost of farm labor, and the value of the food of the family, including both the articles purchased and the articles produced on the farm. These statistics are of interest in themselves and are also an essential part of the discussion of the cost of producing farm crops and stock.

Farms were selected first in three, then in five, counties in western, northwestern, southeastern and southwestern Minnesota, and data were systematically gathered in a number of farm homes in these counties. The investigations were instituted by Assistant Secretary Willet M. Hays (then professor of agriculture at the Minnesota College of Agriculture) and have been carried on by the Minnesota Experiment Station cooperating with the Bureau of Statistics of this department.

According to E. C. Parker and T. P. Cooper, who reported the latest of these investigations, the average monthly cash wages of farm laborers on the selected farms for the years 1904-1907, during the eight "crop-season" months, April 1 to November 30, were approximately as follows: Northfield, Rice County (1905-1907), $26.16; Marshall, Lyon County, $26.64; Halstad, Norman County, $25.56, and a large farm in northwestern Minnesota, Norman County, $26.77. During the months of December, January, February and March the average monthly wage at Northfield was $15.80; Marshall, $14.20; Halstad, $11.69, and the large farms in northwestern Minnesota, $14.36.

The average cash value per hour of farm labor on all the farms, for the three years 1905-1907, was 11.2 cents for December, January, February and March, and 12.7 cents for the "crop-season" months, April to November, inclusive. While wages are lower in the winter months, the number of hours of labor is much less than in the summer, thus there is little difference between summer and winter in the cost per hour for farm labor. This cost is based upon the wages paid to men plus the cost for board.

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* Compiled from Minnesota Sta. Bul. 97; U. S. Dept. Agr., Bur. Statis Buls. 48, 73; Jour. Home Econ., (1909), No. 1, pp. 4351.

The average number of hours worked per day by men (1902-1907) on the farms at Northfield, southeastern Minnesota, was 8.94 hours, with 3.64 hours for Sunday work. At Marshall, in southwestern Minnesota, 8.66 hours for week days and 3.05 hours for Sundays, and at Halstad, in northwestern Minnesota, 8.10 hours for week days and 2.76 hours for Sundays. No estimate is given of the average length of the working day of the women on these farms.

The statistics summarized show that on an average the total value of the farm produce used per family was $222.97; of groceries and fuel, $170.89; of man and horse labor, $57.74; of women's labor, $216.66, and of house furnishings, $32.46 per year, women's labor representing 30.91 per cent of the total cost, the largest single item, with the exception of farm produce, which was 31.81 per cent of the total.

In estimating the cost of board per man per month, record was kept of the food, including groceries, meat, farm products, etc., fuel, garden produce, including cash cost of seeds, labor, rent of land, etc., the labor of men in the household and labor of women in the household. Record was also kept of the number of persons who were boarded and the number of days each was boarded.

Assistant Secretary Hays and E. C. Parker made the following statements regarding this part of the work:

"In determining the cost of board on farms per day and per month, it is necessary to figure the total cost of the table board each year, and then divide this sum by the total number of days' board in terms of one man. It is impossible to figure this cost of board month by month during the year, because the purchase of supplies may be great one month and very small the next month. Inventoried supplies of flour, sugar, farm produce, etc., are consumed during a number of months, and the exact amount consumed each month cannot be determined. Cost of board per month per man is, therefore, figured from a yearly average, and the data secured * * * are used in determining the rate of wages per hour. * * *

"Wages for household work are not actually paid on a majority of farms, but a yearly cash value is placed upon the household work on each farm, so that the cost of board may be reduced to cost per month per man and be used in determining rates of wages for man labor. The amount of wages * * * [assigned] in each case is determined by the standard of living, the size of the family, and the prevailing wages for housekeepers and hired women."

The average cost of farm board per month of one laborer for the three years 1905-1907 was, according to the figures summarized, $14.36 at Northfield, $12.73 at Marshall, $11.58 at Halstad, and $10.02 on the large grain farm in northwestern Minnesota. "The average cost per day was 47.9

cents at Northfield, 42.4 cents at Marshall, 38.6 cents at Halstad, and 33.4 cents for the large farm in northwestern Minnesota; the average cost of board per month on all farms was $12.65, and per day 42 cents."

An important factor in determining the cost of board on farms is the proportion of home-grown material and purchased foods which is used. The table which follows shows the average quantiy of farm produce other than vegetables used on the various farms:

Average annual consumption of farm produce per man on certain Minnesota farms.

Location of Farms	Whole milk	Skim milk	Butter	Cream	Eggs	Pork	Poultry	Beef	Mutton
Northfield	333.2	--------	19.1	16.3	61.8	94.4	22.6	--------	--------
Marshall	241	298.9	68.5	90.1	46	77.5	24.9	28.4	4.1
Halstad	48.2	718.1	52.2	84.7	26.3	60.1	6.8	118.2	2.2

According to T. P. Cooper's discussion of this subject:

"The values given in the table afford a good illustration of the quantity * * * of the farm products used per man, and show the great difference in the dietary of the farmers in the southeastern part of the state and those in the northwestern. At Marshall a larger amount of butter was made and consumed on the farm than at Northfield, and a considerably larger amount of cream, meats, etc., were used, while the quantity of eggs and pork used was smaller. At Halstad as at Marshall there was a tendency to make a greater use of products produced at home. The saving shown in the amount of butter and eggs use per man is possibly due to the fact that they have a ready cash sale, but is more likely due to the use of certain substitutes which are cheaper or more easily secured.

"No skim milk (that is, milk from which the greater part of butter fat has been separated, but which still contains about one-tenth per cent fat) was used on the Northfield route, but a large quantity was used on the Halstad route and but very little whole milk. The quantity of cream used on the Marshall route is large compared with Northfield, 90 pounds against 16 pounds, but the quantity of whole milk consumed was less. In 1907 only two farms on the Halstad route used whole milk. However, the loss of fat in the whole milk was made good by the use of cream and the skim milk. The cream commonly used on these farms contains from 20 per cent to 30 per cent butter fat.

"It is of interest to note the great dependence placed upon dairy products on the Marshall and Halstad farms. There, the milk, cream and butter used assume a prominent place in the family diet. As no milk or cream is purchased, the quantities of milk used indicate in a way the dependence of the farm family on the different routes upon these products. At Northfield 349 pounds of milk and cream were consumed per man per year, while at Marshall and Halstad the amounts are 630 pounds and

851 pounds, respectively. The farm at Halstad, then, provides almost two and a half times more milk and cream per man per year than the farm at Northfield.

"The farms at Halstad furnish 187 pounds of meat per man per year, those at Marshall 134 pounds, and at Northfield 117 pounds, the housewife at Northfield being more dependent upon the butcher than are those of Marshall and Halstad. The smaller quantity of meat from the farm used at Northfield is probably due in part to the fact that the average number of persons boarded is insufficient to consume fresh meat during the warm months and in part to a distaste for the preserved products. The value of the farm produce used at Halstad and Marshall is about one-third of the total cost of board, which illustrates the old saying that the farmer obtains one-half his living from the farm. If labor and furnishings are not considered, the farm, as determined by cost, furnishes 44 per cent of the living at Northfield, 53 per cent at Marshall, and 56 per cent at Halstad. If food values are taken into consideration, a much higher proportion would be furnished from the farm. A large proportion of the expenditures for groceries is for items having a slight food value best used for condimental purposes and for furnishing pleasant changes.

"If people are known by their dietary, we may look upon the farmer of Minnesota as being an exceptionally well-fed individual and consequently having a high labor efficiency. This view is undoubtedly correct, for while the average number of hours of labor by the farmer is not excessive, yet a visitor is usually impressed with the amount of work accomplished.

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES IN IOWA

FOR FISCAL YEAR, JUNE 30, 1908, TO JULY 1, 1909

Number	County	RECEIPTS			DISBURSEMENTS							Number sessions	Total attendance	Was session held for women	Was session held for boys	Number
		State aid	Miscellaneous receipts	Total receipts	Speakers and judges	Premiums on corn	Miscellaneous premiums	Printing, advertising and postage	Hall rent	Miscellaneous expense	Total disbursements					
1	Adair	75.00	56.17	131.17	$ 62.62	$ 27.50	$ 8.75	$ 17.30	$ 15.00	--------	$ 131.17	4	750	Yes	No	1
2	Appanoose	75.00	98.73	173.73	55.60	--------	--------	52.98	54.00	$ 11.15	173.73	----	--------	----	----	2
3	Benton	75.00	--------	75.00	16.00	--------	--------	34.50	24.50	--------	75.00	2	200	No	No	3
4	Black Hawk	50.00	--------	50.00	25.50	--------	--------	6.00	--------	18.50	50.00	3	600	Yes	No	4
5	Bremer	75.00	4.56	79.56	39.60	--------	--------	14.96	5.00	11.00	79.56	8	1,280	Yes	Yes	5
6	Buchanan	75.00	--------	75.00	32.50	--------	--------	10.25	20.00	12.25	75.00	5	1,200	Yes	Yes	6
7	Buena Vista	75.00	36.00	111.00	6.00	--------	25.00	--------	75.00	5.00	111.00	9	8,000	Yes	Yes	7
8	Butler	75.00	20.85	95.85	44.35	14.00	--------	5.75	15.00	16.75	95.85	9	1,080	Yes	Yes	8
9	Calhoun	75.00	17.75	92.75	71.00	--------	--------	14.37	--------	7.38	92.75	5	1,000	Yes	Yes	9
10	Cedar	56.50	--------	56.50	34.49	--------	--------	13.39	--------	8.62	56.50	7	1,400	Yes	No	10
11	Cerro Gordo	72.75	--------	72.75	21.50	19.25	--------	11.25	15.50	5.25	72.75	7	1,100	No	No	11
12	Cherokee	75.00	268.61	343.61	28.25	81.50	53.00	9.72	80.85	90.29	343.61	8	1,200	Yes	Yes	12
13	Chickasaw	75.00	113.91	188.91	94.41	--------	--------	15.10	51.00	25.40	188.91	9	1,220	Yes	Yes	13
14	Clay	75.00	--------	75.00	--------	21.00	20.00	--------	6.00	28.00	75.00	3	900	Yes	No	14
15	Clayton	72.81	31.60	104.41	22.21	30.00	11.75	19.85	20.60	--------	104.41	2	800	Yes	Yes	15
16	Clinton	75.00	7.68	82.68	30.93	--------	--------	--------	18.00	33.75	82.68	5	2,800	Yes	No	16
17	Crawford	75.00	.16	75.16	30.46	--------	--------	5.53	1.00	38.77	75.16	3	90	No	No	17
18	Dallas	75.00	44.39	119.39	36.39	50.00	18.00	5.00	10.00	--------	119.39	4	500	Yes	No	18
19	Decatur	75.00	--------	75.00	43.92	--------	--------	11.33	--------	19.75	75.00	8	1,600	Yes	Yes	19
20	Delaware	67.77	--------	67.77	51.00	--------	--------	7.69	--------	9.08	67.77	6	900	Yes	Yes	20
21	Des Moines	75.00	--------	75.00	30.61	--------	--------	27.89	15.00	1.50	75.00	5	1,500	Yes	No	21
22	Dickinson	75.00	134.35	209.35	80.15	60.00	29.50	6.40	25.00	8.30	209.35	8	1,800	Yes	Yes	22
23	Dubuque	75.00	44.00	119.00	27.00	10.50	43.00	6.50	20.00	12.00	119.00	----	--------	----	----	23
24	Emmet	75.00	640.30	715.30	83.90	58.25	300.00	157.01	32.00	84.14	715.30	----	--------	----	----	24
25	Fayette	75.00	2.75	77.75	17.50	19.50	5.00	23.00	3.00	9.75	77.75	6	300	No	No	25
26	Floyd	56.98	--------	56.98	18.72	--------	--------	11.56	15.00	11.70	56.98	6	3,500	No	No	26
27	Fremont	75.00	53.16	128.16	30.04	43.00	--------	15.12	10.00	30.00	128.16	9	2,000	Yes	No	27
28	Greene	75.00	30.00	105.00	20.00	6.00	33.00	10.00	12.00	24.00	105.00	4	695	Yes	No	28
29	Grundy	38.63	10.00	48.63	16.13	--------	--------	7.50	24.00	1.00	48.63	4	1,350	Yes	No	29
30	Guthrie	75.00	33.50	108.50	36.00	20.50	--------	41.00	6.00	5.00	108.50	6	1,200	Yes	No	30

31	Hancock	60.00		60.00	36.50	16.00		3.50		4.00	60.00	8	1,630	Yes	Yes	31
32	Hamilton	75.00	35.72	110.72	24.37	25.00	15.00	16.35	15.00	15.00	110.72	4	1,000	No	Yes	32
33	Harrison	75.00	29.15	104.15	65.90			6.50	15.00	16.75	104.15	6	3,000			33
34	Hardin	75.00		75.00	40.08	5.00		4.92	25.00		75.00					34
35	Henry	75.00	98.00	173.00	15.00		110.00	30.00	18.00		173.00					35
36	Howard	67.05		67.05	52.50	7.50		2.55		4.50	67.05	4	1,000	Yes	Yes	36
37	Humboldt	75.00	27.49	102.49	86.49			1.00	15.00		102.49					37
38	Ida	75.00	177.49	252.49	32.30	98.00	24.75	21.35	25.00	51.09	252.49	7	2,400	Yes	No	38
39	Iowa	75.00	10.00	85.00	24.00	14.00	20.00	4.50	22.50		85.00	7	1,000	No	No	39
40	Jackson	75.00		75.00	44.99			1.78		28.23	75.00	5	1,000	No	No	40
41	Jefferson	75.00		75.00	35.35			16.00	8.00	15.65	75.00	4	500	No	No	41
42	Johnson	64.90		64.90	45.55	5.00		8.50	2.50	3.35	64.90	4	550	No	No	42
43	Keokuk	75.00		75.00	75.00						75.00	12	3,000	Yes	Yes	43
44	Kossuth	73.55		73.55	30.05			10.00	30.00	3.50	73.55	5	770	No	No	44
45	Lee	75.00	17.44	92.44	66.09			7.50	15.00	3.85	92.44	5	1,500	Yes	No	45
46	Linn	75.00	23.50	98.50	60.53			17.37	14.00	6.60	98.50	5	600	Yes	No	46
47	Louisa	72.75		72.75	5.00	33.00	10.00	4.50	10.00	10.25	72.75	5	1,200	Yes	No	47
48	Lucas	72.16		72.16	47.46		18.75	5.95			72.16	8	800	Yes	Yes	48
49	Lyon	75.00	93.23	168.23	18.73		23.00	101.50	25.00		168.23	5	1,500	Yes	No	49
50	Madison	56.75		56.75	26.25		20.00	7.00	3.50		56.75	4	1,000	Yes	No	50
51	Mahaska	75.00	800.43	875.43	28.86	1.60	362.38	222.10	50.00	52.09	875.43	7	6,500	Yes	Yes	51
52	Marion	75.00	5.95	80.95	7.65			60.90		12.40	80.95	8	2,000	No	No	52
53	Marshall	75.00	10.05	85.05	56.15			26.00		2.90	85.05					53
54	Mills	50.00		50.00	15.00			23.00	12.00		50.00					54
55	Mitchell	75.00	39.23	114.23	65.23	6.50		17.50	25.00		114.23	8	2,400	No	No	55
56	Monona	75.00	63.03	138.03	69.03	22.50	24.00		21.00	1.50	138.03	7	700	Yes	No	56
57	Monroe	75.00	208.00	283.00	43.00			215.00	25.00		283.00	7	1,400	Yes	Yes	57
58	Muscatine	65.40		65.40	38.40			15.00	10.00	2.00	65.40	6	1,500	Yes	Yes	58
59	O'Brien	75.00	24.50	99.50	33.50	19.00		7.00	40.00		99.50	8	1,300	Yes	No	59
60	Osceola	64.78		64.78	35.28			8.20	2.00	19.30	64.78	6	1,200	Yes	Yes	60
61	Page	75.00		75.00	40.00			10.00	25.00		75.00	7	1,500	Yes	No	61
62	Palo Alto	75.00	74.95	149.95	47.00	10.00	18.25	33.00	25.00	16.70	149.95					62
63	Pocahontas	75.00	114.82	189.82	84.00		37.00	18.00	20.00	30.82	189.82	8	800	Yes	No	63
64	Polk	75.00	265.19	340.19	34.81	1.40	100.42	30.71	27.25	7.00	340.19	5	900	Yes	No	64
65	Poweshiek	75.00	164.90	239.90	20.37		119.03	15.00	70.50	15.00	239.90	5	1,000	No	Yes	65
66	Ringgold	75.00	102.56	177.56	30.63	50.00	36.50	15.43	30.00	15.00	177.56	8	2,400	Yes	No	66
67	Sac	75.00	240.00	315.00	35.00	65.00	200.00		15.00		315.00	4	1,000	No	No	67
68	Scott	52.91		52.91	33.65			5.26		14.00	52.91	5	2,700	Yes	No	68
69	Shelby	75.00	43.00	118.00	55.00	27.50		12.00		23.50	118.00					69
70	Sioux	75.00	.31	75.31	46.01			16.70	10.00	2.60	75.31	5	1,150	Yes	No	70
71	Story	75.00	32.75	107.75	27.50	37.00	17.00	9.25		17.00	107.75	4	250	Yes	No	71
72	Tama	75.00		75.00	29.52	10.00	15.00	10.48	10.00		75.00	5	400	No	No	72
73	Taylor	52.30		52.30	33.89			5.75		12.66	52.30	6	2,000	No	Yes	73
74	Union	75.00	129.52	204.52	48.27	61.50	62.40	5.00	20.00	7.35	204.52	6	1,440	No	No	74
75	Van Buren	59,46		59.46	41.55			7.91	10.00		59.46	8	1,500	No	No	75
76	Wapello	75.00		75.00	8.06			41.94	25.00		75.00	8	900	No	No	76

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES IN IOWA—CONTINUED

Number	COUNTY	RECEIPTS			DISBURSEMENTS							Number sessions	Total attendance	Was session held for women	Was session held for boys	Number
		State aid	Miscellaneous Receipts	Total receipts	Speakers and judges	Premiums on corn	Miscellaneous premiums	Printing, advertising and postage	Hall rent	Miscellaneous expenses	Total disbursements					
77	Warren	75.00	15.56	90.56	29.31	20.00	25.00	9.75		6.50	90.56	4	350	No	No	77
78	Washington	75.00	147.95	222.95	81.25	10.00	37.00	54.55	10.00	30.15	222.95					78
79	Wayne	75.00		75.00	45.34			11.66	18.00		75.00	8	2,100	Yes	No	79
80	Webster	68.37		68.37	39.39			18.50		10.48	68.37					80
81	Winnebago	75.00	41.82	116.82	91.82	17.00		6.00		[illegible]	116.82	6	900	No	No	81
82	Winneshiek	68.30		68.30	57.85			4.70		5.75	68.30	3	225	No	No	82
83	Woodbury	75.00	100.25	175.25	57.40		51.70	27.50		38.65	175.25	6	256	Yes	Yes	83
84	Worth	75.00	28.00	103.00	51.70	33.00		12.30	6.00		103.00	5	1,000	No	No	84
	Total 1908	$6,011.12	$4,816.26	$10,827.38	$3,339.74	$1,355.50	$1,801.18	$1,867.81	$1,323.70	$1,043.45	$10,827.38	426	*101,480			
	Total 1907-8	$6,030.51	$4,020.07	$10,050.58	$3,815.18	$1,039.51	$1,113.61	$1,689.59	$1,608.63	$673.06	$10,050.58					

*Attendance for 72 institutes reporting. On this basis the total attendance for the 84 institutes would be 118,440.

PART XI.

IOWA STATE FAIR AND EXPOSITION, 1909

Press Reports and Live Stock Awards

Results in Boys' Judging and Girls' Cooking Contest

PRESS REPORTS.

Wallaces' Farmer, Des Moines, Iowa.

The bone and sinew of Iowa was represented at Des Moines last week. Nowhere can there be found a more representative gathering of the men who have made the great Mississippi valley the most prosperous agricultural section on the face of the earth. The Iowa State Fair is distinctly an agricultural exposition and is attended by a typically agricultural folk—intelligent, prosperous, happy, well read, well-fed, well dressed—the people who stand for "good farming, clear thinking, right living." It is because of the character of the people that exhibits of practically everything needed on the farm and in the home may be found on the grounds—the very best of the improved breeds of horses, cattle, sheep, swine, poultry, vehicles, improved implements and appliances of every description, seeds of the best varieties of farm crops, fruits, plumbing and lighting systems, house furnishings, stoves, musical instruments —everything, in fact, needed on an up-to-date farm or of use in a well ordered home. The man who makes anything or sells anything that will lighten the work of the farmer and his wife or contribute to their comfort has found that there is no better place to display his wares than at the Iowa State Fair. Iowa farmers are quick to recognize and appreciate anything of real merit.

Monday and Tuesday were ideal fair days, neither too warm or too cold. Wednesday came with a clouded sky and a decided drop in the temperature, but the attendance slightly exceeded that of Tuesday when there were about sixty thousand people on the grounds. With Thursday morning came the rain, which began early and continued until afternoon.

As a result the attendance was light compared with the preceding days, but there were enough people to fill the stock pavilion and other buildings and those who attended for the purpose of studying the various exhibits found it an excellent time. A few years ago a rainy forenoon would have emptied the grounds. Now there are enough buildings to take care of thirty or forty thousand people without a great deal of discomfort. If the principal buildings were connected by wide covered walks the fair, barring the race track features, would be almost independent of the weather.

The citizens of Des Moines never discharged their duties to the fair visitors better than this year. A week before the fair opened a number of the principal down-town streets were much torn up and incompleted paving made it difficult to get about; street cars to the fair ground could cross but one bridge; everything was topsy-turvy. Before the fair was under full headway the paving was completed, the bridges were open and the streets well cleaned. Notwithstanding the difficulties under which the city labored, fair visitors never found the streets in such good condition. The commercial organization maintained information bureaus at the principal railroad stations where visitors were given addresses at which they could obtain lodging, and a card bearing plain directions for reaching them. This work was done free and solely for the accommodation of visitors. A large number of extra policemen and detectives were employed to prevent thieving and disorder and to protect people from exorbitant charges in barber shops, cafes, etc. Des Moines did everything possible to make folks understand that they were welcome guests.

The amusement features were excellent. Each evening a show of fireworks was given before the grand stand, and a live stock and acrobatic exhibition in the live stock pavilion. That these were largely attended was evidenced by the fact that to secure seats, it was necessary to apply before noon of each day. One of the evening shows was closed about half an hour before the other, thus avoiding congestion at the street car and railroad stations. The side shows, if not particularly elevating, were clean; there was nothing of a particularly objectionable character. The Iowa State Fair has clearly demonstrated that nasty side shows are not necessary to a successful fair.

A few years ago such a crowd as was present on one of the big days last week would have so filled the various places of interest as to make it almost impossible to get anywhere or see anything. Under present conditions there seems to be plenty of room, except during the rush for refreshments at the noon hour and evening jam at the street car and railroad stations. One hardly realizes there are so many people on the grounds until the gate receipts are published. The reason is that the exhibition features have so multiplied that the available space is almost filled and the people are well distributed over a quarter of a section of buildings, tents, and open space filled with things of every sort to interest the western farmer. Fifty to sixty thousand people now seem no more than twenty-five to thirty thousand a few years back.

Not a few farmers drove to the fair in their own automobiles, some coming half way across the state. These folks had a most comfortable time of it. They were able to take rooms well out on the edges of the city, away from the noise and dust, and their autos enabled them to get back and forth with the maximum of comfort.

The state board of agriculture deserves much credit for the display of farm crops made in the Agricultural building. Early in the season Secretary Simpson arranged with Professor Crossley, of the Agricultural College, to collect and arrange a representative exhibit of Iowa's field crops, and supplied the money necessary. As a result this year for the first time Iowa had an exhibit of this sort worth mentioning. While Professor Crossley and his assistants arranged it in a most attractive manner, the value of the exhibit was in the information it furnished. There were samples of the first, second, and third cuttings of alfalfa from over half the counties in the state, each bearing a placard on which was stated the name of the grower, the county, the kind of soil, date of sowing, yield per acre, etc. It was a tremendous object lesson showing the success of growing alfalfa in Iowa. One large section was devoted to root and forage crops and another to grain crops. Samples of different varieties of small grains were shown and placards containing information as to yield in different counties in the state. Small leaflets were distributed containing in condensed form information concerning the character of the different small grains, their importance in the state, the soil to which they are adapted, amount of seed to the acre, time of sowing, harvesting, value per acre, etc., etc. It was altogether a most valuable and instructive exhibit and well worth a couple of hours study. In addition to the exhibit arranged by Professor Crossley there were county exhibits by Polk, Lucas, Wright, and Cass counties, and a display of crops grown at the different institutions under the jurisdiction of the state board of control.

The extension department of the Iowa Agricultural College had a very instructive exhibit in the building formerly used as a women's rest building. One part of this building was partitioned off for a lecture room, where lectures were held at 11 o'clock each day on subjects of interest to farmers generally, while in the afternoon special lectures were given on subjects of interest to women folks. In the remainder of the building different departments had interesting exhibits of different sorts. There were graphic illustrations showing the amount of water removed from the soil by different farm crops, a study of the effects of different manures on crops, samples of different kinds of soil found in Iowa with a statement of nitrogen and phosphorus content, a large soil map of the state made of soil brought from the different counties and laid off in counties so that the variation in soils could be seen at a glance. There was a collection of the different insects injurious and beneficial found on the farm, varieties of grain from a number of the county farms, devices for the purpose of testing seed corn, a large plat showing how to make a test of individual ears, and charts showing the yield from individual ears. There were also charts showing the crop production by different counties, and a large amount of statistical information of general interest. In the horticultural booth insect pests at different stages of their life history were shown, as well as spraying materials and apparatus. Samples of posts from different varieties of wood and treated by dipping in preservatives were shown; also creosote blocks. In the dairy department was a map showing the location of the creameries in Iowa, fat testing machines, moisture test for butter, samples of a daily record sheet for keeping the weight and test of individual cows, etc. The department of farm engineering exhibited a model farm power plant, with a small gasoline engine running a churn, washer, separator, and other small farm machines. Small models of concrete and tile silos were shown; also a great variety of different sorts of horse shoes, farm tools, etc. In the booth occupied by the highway commission were models of concrete culverts, bridges, and specifications showing the cost of constructing them. It is unfortunate that this college exhibit was not located in a more conspicuous place.

The six scholarships at the Iowa Agricultural College offered to the boys doing the best work in judging live stock and corn were won by the following: Edward Vaughn, Marion, 87 1-3 per cent; Earl C. Girton, State Center, 85 3-4; Bruce Purvis, West Liberty, 84 1-6; Roy Keables, Gilman, 83 3-8; Ryle S. McKee, Indianola, 82 3-8; Jesse M. Dowell, Bedford, 80.

THE DAIRY EXHIBIT.

One end of the agricultural and horticultural building was given over to the exhibit of dairy machinery and products. The principal cream separators were shown, some of them in operation, and most of the manufacturers had displays of other dairy machinery and apparatus. There were 117 entries of butter. First prize in the creamery class was won by H. E. Forrester, of Lake Mills, Iowa, with a score of 97½ on whole milk butter. L. C. Peterson, of Story county, won second in the whole milk class with a score of 97¼. In the gathered cream class first was won by L. O. Knutson, of Manley, Iowa, with a score of 97. Because of some confusion in separating the entries second premium in the gathered cream class had not been determined at the time this report was closed. Others who exhibited high scoring samples were Thos. E. Sadler, of Hazleton; E. E. Mittlestadt, of Delaware; O. C. Capper, of Westgate; C. L. Woodworth, of New Hampton.

In the dairy butter class Mrs. Herriott, of Cornwall, Iowa won first with a score of 94; Mrs. J. Peters, Ankeny, Iowa, second, with 93½; H. B. Shirk, Spirit Lake, Iowa, 93½; Mrs. E. B. Shoots, Bondurant, 93; Amy B. Younky, Chariton, 92½.

THE SHORTHORNS.

The Shorthorns were out in strength. While the exceptional individuals were perhaps not as numerous this year, the general average was good, and possibly better than usual. What should be a source of great pride to the state was the great showing made by the Iowa exhibitors. Tietjen, Edwards, and White all made a good showing, capturing two firsts, three seconds, and the junior cow championship. As usual, the Elmendorf Farm and Harding were out to take the largest share of firsts. Grand champion bull went to the Elmendorf Farm on the phenomenal Iowa two-year-old King Cumberland, who made such a strong bid last year for the championship. Elmendorf Farm also took the grand champion cow on Sinnissippi Rose 2d, a big, broad, slightly rough white matron who is hardly up to the usual standard of grand champion cow. With grand champion bull, grand champion cow, and a first prize senior heifer calf Elmendorf Farm had a wonderfully strong exhibitor's herd, one which will make things interesting at all the big shows this year. The other herd displays went to Harding. In the get of sire displays Harding had four of the offspring of the famous old white bull Whitehall Sultan, which won handily over the Elmendorf four sired by Whitehall Marshall, the champion son of Whitehall Sultan. The produce of cow class again showed the potent effect of the Whitehall Sultan blood, Harding winning on a couple produced by Countess Cashmare, one sired by Whitehall Sultan and the other by Whitehall Marshall.

The Shorthorn bull classes were strong, especially the aged and two-year-old. The younger bull classes, with the exception of senior yearlings, were very well filled but showed a marked lack of uniformity. It's the old story of bulls which have been fitted and fed from their birth up being shown against youngsters which have been fitted for a few months only.

Aged bulls came out strong, and excellent individuals were to be found well toward the end of the line. Neither Whitehall King nor Whitehall Marshall were there, but Harding with Sidelight and Dunwoody with Nonpareil Marquis filled their places quite acceptably. In the two-year-olds King Cumberland, last year's junior champion, now owned by the Elmendorf Farm, had it all to himself. The rest of the class was quite uniformly strong, but didn't commence to have the growth shown by this husky Iowa product. In the junior yearlings the Elmendorf Farm again came out at the top with a beautifully fitted calf, Elmendorf Marshall. Both the yearling bull classes made a rather light showing, but the senior calf class made up for it with twenty contestants. Of course in such a large class there were many animals which lacked the fitting to show at their best. Harding won, with White, an Iowa man, second. The junior bulls were uneven. Here White won first over Harding.

The Shorthorn cow classes were exceptionally strong from start to finish. In every class there were from fifteen to thirty-three contestants showing. As a whole the cow classes were stronger both in numbers and quality than the bulls. Aged cows came out fifteen strong, a very good lot. Iowa breeders took second and third; Edwards second with Queenston Bellona, and Tietjen third with Village Belle 3d. In the eyes of some Edwards' cow might have gone over Elmendorf's Sinnissippi Rose on account of her greater scale and width, but her flesh was a little soft while the Elmendorf cow was hard and firm. The two-year-olds ran good for a long way down the line. The first three places were very even, Tomson winning with a firm-fleshed cow showing great spring of rib. Harding and Elmendorf came second and third with cows showing a little more scale but less firmness of flesh. A lot of beautiful youngsters came out in both yearling classes. In the juniors Tietjen with Miss Marshall 2d, later made junior champion, had an outstanding winner. Thirty-three senior calves were out, among them a lot of good ones which couldn't reach the prize money. Elmendorf took first and fourth and Harding took second and third. These four calves were in a class by themselves because of their greater growth and finer fitting. Fitting of the calf is three-fourths of the show ring battle. Capt. T. E. Robson, of Canada, well known as a judge, made the awards.

THE ANGUS.

While not reaching the phenomenal numbers of two or three years ago, the Angus show was weak only by this comparison, as the quality was exceptional throughout, with Iowa herds again furnishing all the main prize winners. Indeed, with the single exception of the Nebraska herd of Mr. McClung, it was an all-Iowa exhibit. The herds of McHenry, Binnie, and Battles led in the fight for premier honors. The event which capped the climax was the winning of the Miller Angus steer in the grand championship steer class, the Angus thus upholding the reputation they have earned for many years in fat stock competition. No rings in the show attracted more attention than the Angus judging. Many Angus breeders from all over Iowa were present, as well as from other states, and they took keen interest in the awarding of the prizes. Mr. Stanley Pierce, of Creston, Illinois, well known as a breeder, made the awards in the bull classes and the first classes in the cow ring. He was called home by the sickness of his wife, and the task was completed by Chas. Escher, Jr., of Iowa, who needs no introduction to cattlemen. Angus breeders have always stood the brunt of the Angus show ring classes—not only those within the state, but also those without the state—and have generally carried off the lion's share of the prizes. Knowing how strong the competition is that they are up against, it has had a tendency to reduce the numbers of the Iowa show, as breeders from without, unless they are exceptionally strong, have hesitated to take issue with the Iowa herds. To this may be attributed, we believe, in a large measure the smaller Angus entries at the Iowa State Fair the past two years. It was an interesting fight this year between the McHenry, Battles, and Binnie herds. Mr. McHenry was strongly reinforced with the grand champion bull Glenfoil Thickset 2d, which he purchased from Mr. Battles earlier in the season, and succeeded in carrying off both grand champion bull and grand champion cow, winning six out of twelve possible firsts. Mr. Battles brought out a great two-year-old to contend with Glenfoil Thickset for championship honors, and he promises much for the future, making the contest decidedly interesting to say the least. Glenfoil Thickset 2d, however, is in fine shape this year, and may be rated as one of the best bulls that the Angus breed has produced. He, with Oakville Quiet Lad, Mr. Battles' two-year-old, were the star performers in the bull classes. Of the yearlings, the juniors were the better class. Messrs. Battles and Korns bringing forth two excellent entries which were awarded first and second respectively. The senior bull class was very light with only two entries. The juniors were a very much better class, with the McHenry calf winning.

Competition has always been most keen in the Angus cow classes, and history repeated itself this year. Mr. Escher's selection for the head of the class in the aged ring was Mr. Binnie's Queen Lass of Alta 3d, while Battles' Gay Bonnie Lass, well known to show goers, was second. It was McHenry and Battles for it in the two-year-old ring. McHenry won first and the Battles entry again second. The yearlings were not a hard ring to decide, but in the heifer calf classes Judge Escher had considerable of a problem to solve, and it would not be surprising if other good judges should see it in a different light, as there is plenty of room for argument betwixt the splendid lot of calves. Good little calves and good big calves made the matter of mixing the type almost a necessity. The same herds for the most part will come together again in Hamline next week where Mr. E. T. Davis, recognized as one of the best judges of the breed, will make the awards, and his placings will be looked forward to with much interest.

THE HEREFORDS.

Iowa has fewer Herefords than Shorthorns and Angus, but the Hereford show this year would have been a credit to the strongest Hereford state in the union. They make a beautiful sight in the ring with their extremely uniform coloring and their low-set, vigorous appearance. Out of the state men took all of the big prizes, Van Natta of Indiana, Cargill & Price of Wisconsin, Harris and Makin Bros. of Missouri, having a great fight between them for most of the firsts. Van Natta had the honor of winning grand champion bull on his last year's grand champion, Prince Lad 9th, and grand champion cow on Margaret. With these two he had little trouble in landing exhibitor's herd over Harris. In get of sire Van Natta again had these two champions to help him out, both being sired by Prince Lad; Harris came second with four of Beau Donald 5th's get, and Cargill & Price third with four sired by Princeps 6th.

The Hereford bull classes were just fairly strong. The top two or three animals in almost all of the classes were exceptionally good, but after these were passed the quality tailed down rather rapidly. In the aged class a strong bunch of the low-down, blocky fellows came out. Van Natta, with Prince Lad 9th, and Bryant, with Governor, had two magnificent entries, the former winning handily because of greater breadth and scale. The two-year-olds were a very strong class. The top three animals—Princeps 6th, owned by Makin Bros.; Curtis, owned by Bryant, and Prime

Lad 38th, owned by Van Natta—were three strong contenders for first, second, and third places. Both yearling classes were weak. Harris won in the senior division with an outstanding calf in nearly every way, while in the junior section Cargill & Price came out with another quite exceptional individual. The senior calves were exceptionally good throughout; Missouri won first and second, Harris' calf being especially strong, low-set, broad, and beautifully fitted. The junior calves were rather an uneven bunch; Bryant, Stannard, and Cargill & Price had three fairly good animals which strongly contested for first place.

A fine lot of Hereford stuff was out in all the cow classes. Twelve aged cows came out, and for the most part they were a good, smooth lot. Cargill & Price's Miss Filler 2d, last year's grand champion cow, made a strong bid for first, but the judge preferred Van Natta's Margaret, perhaps a little bigger cow but apparently not as hard and smooth in flesh. The two-year-olds were a beautiful lot. First went to Cargill & Price on Princess 2d, a very smooth, low-set cow. The senior yearlings were good well down toward the foot of the line. The first two places went to Missouri men, Harris and Makin Bros., on very low-set, smooth, deep heifers. The junior yearlings was another well filled class of pretty young stuff, and again Makin Bros. and Harris came in for first and second. Twenty-five senior calves were shown, and most of them were good, although they tapered down pretty badly at the foot of the line, due to lack of fitting. Van Natta took first on a big, growthy heifer. Thos. Mortimer, of Nebraska, awarded the prizes quite satisfactorily.

THE POLL DURHAMS.

The Polled Durhams were rather weaker than last year. It was an all-Iowa show, Capper, Deuker, Huntley, Marti, and Williams, the exhibitors, all being Iowa men. The prizes were quite evenly divided among these five. The Polled Durhams seems to gradually be getting stronger in the state, and year by year their quality creeps up nearer to the best of the Shorthorns. Mr. L. G. Shaver, the well known breeder, made the awards.

THE GALLOWAYS.

The Galloways had but three herds, those of Hechtner and Bales of Iowa and Straub of Nebraska. These three divided the prizes fairly evenly with Straub getting a little the lion's share. Straub had the champion bull and Hechtner the champion cow. Although the numbers were weak, the quality was unusually good for the Galloways. Mr. E. T. Davis, the Angus breeder gave the decisions.

THE RED POLLS.

Red Polls were strong, Clark and Clouse of Iowa, Buchanan of Indiana, Graff of Nebraska, and Hill of South Dakota, being the exhibitors. The prizes fell quite evenly, Clark having a little the best of it in the number of ribbons won. The quality of Red Polls is improving right along, for the type is gradually steadying down. It is always a big job to judge this breed and Professor Dinsmore had his hands full. He seemed to show a slight inclination toward the beef type.

THE DAIRY BREEDS.

Iowa is one of the great dairy states, but her number of pure bred dairy herds is deplorably small. In the whole dairy show there were but seven Iowa breeders, and ringside interest was decidedly lacking. Producing beef is a lot more romantic if not more profitable than producing butter fat, and the Iowa farmer seems to prefer to look at a beautifully conditioned, chunky beef cow rather than at her skinny, nervous looking sister. There are lots of points which might be picked up in the dairy barns which most fair goers neglect.

On the whole there was an unusually strong exhibit of dairy cattle this year. Two very noticeable features were the great strength of the Guernseys and the presence of the first Ayrshire herd ever shown in Iowa. In numbers at least the Guernseys made the best showing of the four breeds. During the last two or three years the Guernseys have been coming to the front rapidly, and seem destined to play an important part in Iowa's future as a dairy state. Mr. Fox and Mr. Green of Wisconsin divided up most of the prizes with Mr. Marsh and Mr. Quarton of Iowa. Competent judges declared the quality in some of the rings excelled the national dairy show.

The Barclay Farm, Bryn Mawr, Pa., Mr. Oakley, manager, was the only exhibitor of Ayrshires, but this one herd attracted more attention than all the rest of the dairy breeds. The Ayrshire is a beautiful cow and entirely different in type from the other dairy breeds. The ideal Ayrshire is a big, hardy cow, usually white and brown spotted in color, with a wonderfully level, perfectly shapped udder. But the distinguishing characteristic of the breed to most people is the long, upward curving horn. Mr. Oakey says his herd averaged 9,000 pounds of milk last year testing 4.5 per cent, and that is a record any breed may be proud of.

The Holstein exhibit was hardly as strong as usual this year. Messrs. Barney and White of Iowa and Knowles of Massachusetts were the main exhibitors.

Prof. H. G. Van Pelt judged all of the dairy classes.

The milk cow test brought out a number of entries and much interest was manifested in this contect. The four leading entries were as follows: 1. Finleyston Cherry 6th, Barclay Farms, Bryn Mawr, Pa., Ayrshire; 2, Barleith Snow Drop, Barclay Farms, Ayrshire; 3, Wietske Ormsby, Barney & Co., Hampton, Ia., Holstein; 4, Hospital Pledge, F. P. Knowles, Auburn, Mass., Holstein.

JERSEYS.

The Jersey cattle rings were not as well filled as in some former years. One of the strongest herds entered did not get to Des Moines, but the herds of J. B. Smith, Beatrice, Neb., Smith Bros., Cameron, Ill., and Hunkydory Farm, Pella, Ia., brought out some excellent specimens of this popular dairy cow. The ribbons were fairly well divided, with J. B. Smith taking both championships.

THE FAT STOCK.

The grand champion steer fight aroused keen interest. The preliminary classes in all breeds had gone off very quietly with but one or two animals being shown in a class. When the grand championship class met there was the champion Shorthorn, Hereford, and Angus, and the champion grade of each of these three breeds competing for the final honors. Of these six animals it simmered down to three two-year-olds, a Shorthorn steer owned by Peak, a Hereford owned by Cargill & Price, and a grade Angus by Miller. The Shorthorn was the biggest of the lot, with great spring of rib, broad loin, and wide thighs. His fleshing was deep over all parts, but it was soft. The Hereford was a lower set fellow with a beautiful conformation; his fleshing, though not so deep, was firmer than the Shorthorn. The Angus was neither as low set as the Hereford nor as pretty in conformation, but his flesh was put on firmer and with less waste than either the Shorthorn or the Hereford. With these three animals before them the three judges of the three breeds, Robson, Mortimer, and Escher could not agree. Each judge seemed to prefer his own, so to decide the matter Professor Craig was called in. At length he announced the grade Angus grand champion, and a cheer went up from the lovers of the blacks.

The grand champion steer My Choice, shown this year by W. J. Miller, of Newton, Iowa, was bred and first brought out by Silas Igo, of Palmyra, Iowa, who won championship honors with him two years ago. Mr. Igo then sold the steer to the college at Ames, who won championship with him last year. Now Mr. Miller succeeds in the difficult task of bringing this steer out again in condition to win championship. Besides the premium money offered by the fair association Mr. Miller also gets the $25 prize offered by Silas Igo for a champion steer of his own breeding.

In the pure bred fat Shorthorns J. R. Peak & Son, Winchester, Illinois, had the only exhibits in the two-year-old and yearling classes.

In the Galloway classes all prizes for fat stock were awarded to the entries of C. S. Hechtner, Chariton, Iowa, he being the only exhibitor in that division. Likewise in the Aberdeen Angus class, the only entries were made by W. J. Miller, Newton, Iowa, and all prizes were awarded to his entries.

In the pure bred Hereford fat steer class Cargill & Price, La Crosse, Wisconsin, won first, also on group. Makin Bros., Grand View, Missouri, had a single entry in the grade class. The real contest of the fat stock show came for the grand championship steer, which was won by the Miller Angus entry My Choice. The Dunwoody herd won championship over all breeds.

THE SHEEP.

An upward tendency in prices for wool and mutton has attracted more people toward the sheep industry, hence a very large show at the Iowa

State Fair this year. The number was so large that the original pens could not accommodate the exhibit and a large number had to be housed in the new hog pens. All classes were very well filled. The Shropshire and Oxford classes were especially strong, there being a large number of imported sheep in competition. Iowa breeders made a splendid show in the different classes and won many of the prizes offered. Many states were represented, making a very high class show.

W. B. Beattie, Wilton Grove, Ontario, Canada, was the judge of the mutton breeds, and W. S. Dixon, Brandon, Wis., of the fine wool breeds. In the Merino classes E. M. Moore, of Michigan, and Cook & Son, of Illinois, divided the premiums between them, Mr. Moore taking first on two-year-old ram and pure bred ram any age, and Cook & Son, taking first in the other classes.

In the Rambouillet classes E. M. Moore took the majority of the first premiums, Mr. Chapman, of Ohio, winning first on yearling ram and on ewe lamb.

In the Cotswold classes F. W. Harding, of Wisconsin, and Lewis Bros., of Illinois, made the exhibit, the former taking first in all the classes except that for ram lamb and for two-year-old ewe, which were won by Lewis Bros.

Alex. W. Arnold, of Wisconsin, was the only exhibitor of Lincolns. Hampshire Downs were shown by Harding, of Wisconsin, and Renk Bros., of Wisconsin, the latter winning with yearling ram and ram lamb and ewe lamb.

There was a very good show of Shropshires.

THE HOG SHOW.

The shortage of hogs as indicated by the high price of pork was reflected in the hog show at Des Moines last week by the decreased number of exhibits as compared with former Iowa hog shows. The number this year was fully a fourth less than the average number for the past three or four years. Yet it was a big show, and perhaps more uniformly good than ever. Feed is high and of course there were a lot of pigs that lacked fitting, and a lot that were brought to the fair to sell instead of to show, but there was less of this "farmer sale stuff" this year than formerly. This condition has been encouraged by the fair management in their new ruling last year that limits entries. It also meets the approval of the spectator, who prefers to see a high class hog show minus the large amount of cheap sale stuff as found at some former Iowa hog shows.

During the past year the swine judging pavilion was completed by installing seats and a complete system of exhibition pens. The crowds were kept out of the judging ring, allowing the judges to work with more satisfaction than formerly. The seating capacity was ample, as at no time were the seats crowded, and at times the crowd watching the judging was so small as to indicate a lack of the old-time enthusiasm in the Iowa hog show. However, there was a constant stream of visitors all week through the mammoth hog barn.

THE RED HOGS.

The Duroc Jerseys made up in quality what they lacked in numbers this year, and the show was one of the most uniformly good of any that has been seen at Des Moines. There were some very strong classes and a number of close decisions. There were no sensational winners, however, and the champions this year were hardly on a par with last year's champions, and especially in the champion boar class. In the aged boar class Waltemeyer Bros. gave Baxter & Comer a close rub for first place. The outside-the-state competition was strong all along the line and on the whole the showing from outside the state was rather stronger than usual, while the home or state exhibitors were hardly as strong. Several formerly strong Iowa exhibitors were not out this year, and this helped make a difference in the Iowa showing.

THE POLAND-CHINAS.

The Poland-China exhibit was large and of good quality, although there were no specially outstanding winners. As usual, the small and medium type of Polands predominated and met with the most favor from the judges. As usual tco, the most quality was found in the small type hog, but the exhibitors with the big type Polands claim the most sales during fair week. None, however, were boasting of big sales, and Poland-China enthusiasm was not running high, notwithstanding the high price of pork. Although Iowa raises more hogs than any other state in the union, it will be noted by the awards that most of the principal prizes went outside the state. One reason for this is that Iowa breeders have largely gone to raising the big-boned type of hogs, which lack the quality and finish that wins. On account of high priced feed a good many of the exhibitors did not fit to win.

THE CHESTER WHITES.

The Chester Whites made about the same showing as last year. In numbers they came next to the Duroc Jerseys and Poland-Chinas. Iowa was pretty well represented and there was considerable competition from outside the state. The premiums were pretty well distributed. E. L. Leavens, our advertiser of Shell Rock, Iowa, again had the sweepstakes sow, as he did last year, and he also had sweepstakes boar bred by exhibitor, first on get of sire, and was a strong winner all through.

BERKSHIRES.

The Berkshire show at Des Moines is never large as compared with the showing of Poland-Chinas and Chester Whites, but the character of the show this year was an improvement over some former Berkshire shows at Des Moines. It was largely an Iowa exhibit, but the Farmer Farm exhibit of Minnesota furnished strong competition all along the line. McDonald Bros., of Montezuma, Iowa, also made a strong showing and won a number of the best prizes, including champion boar bred by exhibitor and first prize young herd. Evans, of Elliott, Iowa, won first on aged herd, champion sow, and was strong in the classes. McPherson, Miller, Ogle, and other Iowa exhibitors, came in for a share of the prizes.

HAMPSHIRE SWINE.

The Hampshire swine show this year was large enough to attract much attention to this new breed of hogs, but was not as large as a year ago, when there was an unusually large exhibit for a new breed. It was the only swine exhibit in which the exhibitors were all from outside the state.

YORKSHIRES.

There were only two exhibitors of the large English Yorkshires, B. F. Davidson, of Menlo, Iowa, and F. M. Buck, of Valley Junction, Iowa.

TAMWORTHS.

There was a good showing of this bacon breed of hogs and the character of the show was rather better than last year. The Exhibitors were largely the same.

THE HORSE SHOW.

This department was without question one of the most attractive features of the entire show. In comparison with last year it fell short both in number of horses and exhibitors, but when character values and select breed types are compared it surpassed last year's and many former shows. In draft classes the very best specimens that could be secured in Europe were on exhibition. It was a rare opportunity given Iowa breeders, farmers, and live stock students to inspect the best of the draft breeds. Good results should follow from such high class horse shows, and no doubt will stimulate the breeders of Iowa to greater progress in the production of better horses. No state in the union has greater resources for the business, and we have a right to look forward for greater achievements to follow as a reward from such a high class show.

Importers seemed to have a slight advantage over the American breeder, but the situation can not prevail if American breeders will give the same attention to developements as the foreigner gives.

Draft gelding and mare classes brought out some good heavy horses. The big importers won in the four and three-year old classes, Burgess winning in the four-year-old and Finch Bros. in the three-year-old. Chas. Irvine, Ankeny, Ia., won on two-year-old and yearlings. He also won first and second on farmer's team, with Loren Dunbar, Earlham, Iowa, third, and C. L. Watts, Spaulding, Iowa, fourth.

Morgans were shown by P. F. Smith, Montezuma, Iowa, and Dewey & Langley, Amboy, Ill.

The exhibit of saddle horses was mainly made by Thos. Bass of Mexico, Mo. O. J. Mooers, of Columbia, Mo., furnished the first prize aged mare and also champion saddle animal.

The mule show was very light, Chas. C. Judy, Tallula, Ill., being the principal exhibitor.

In the standard bred trotter class rings were about up to the usual standard.

The Shetland pony exhibit was larger than some other years and a few had to be sheltered in an extra tent, as the pony barn could not accommodate all the entries. Cassidy & Thompson, Jamaica; Roberts & Son, Ames; John Donhowe, Story City, Iowa, and Geo. H. Simpson, of Wheaton, Ill., divided the ribbons.

The American carriage horse rings brought out the largest entries of the light horse classes. This is a department which has sprung into popular favor among exhibitors and the ribbons were well distributed among the different contestants.

PERCHERONS

This breed exceeded in numbers any other draft breed and in general character was one of unusual quality and value. The stallion classes were exceptionally strong and well filled, there being twenty-eight entries in the two-year-old class. The mare show was of great excellence, containing prize winners from France and splendid specimens of American production.

In placing the awards Professor Kennedy seemed to have considerable trouble from the opening ring of aged stallions, and when the grand champion awards were reached a storm of protest arose. It came when he failed to place the four-year-old stallion Carnot, from the Crouch stable, champion of the show. This stallion was an outstanding winner, and was so conceded by a large majority of experienced and competent judges. The award was a great surprise to the ringside talent and brought forth many expressions of severe criticism. That he had erred greatly in placing the roan mare Castile, from the Burgess barn, first in the four-year-old class and champion, was also the opinion of many good judges. As we have said before, this mare is more of the Belgian than Percheron type and no breeder of good judgment would select her to produce typical Percherons. This decision was decidedly out of place and should not divert the minds of our readers toward mares of this type and character.

BELGIANS

This heavy draft breed made a strong show in both the stallion and mare classes. In fact, it is safe to say that a better lot has not been at the Iowa State Fair before. Noticeable improvement has been made in legs and feet and action. In the three and four-year-old stallion classes twelve head were shown in the former and fifteen in the latter, and a striking feature of these classes was the great weight and uniformity displayed. Iowa breeders furnished their share of the show, especially in the mare and breeding classes.

SHIRES

A more select, high class show of this breed is seldom seen than the one made at the Iowa State Fair this year. Though this class fell short of former years in numbers, it fully sustained its usual place in character and value. Trumans' Pioneer Stud Farm, of Bushnell, Illinois, made one of their strongest shows, and also the largest exhibit.

CLYDESDALES

This breed made the lightest show in numbers that has been made at Des Moines in several years. John Leitch, of Lafayette, Illinois, was the largest exhibitor.

THE HACKNEYS.

The Hackney show was light, but brought out several good rings.

GERMAN AND FRENCH COACH.

Crouch & Son, Lafayette, Ind., were the only exhibitors in this breed, they making entries in the first three stallion classes and one in the aged mare class.

THE BREEDERS' GAZETTE.

CHICAGO, ILL.

Agriculturally, America is soaring these days, and when a country's rural people are prosperous the rest of its population is safe, for farmers feed and clothe the world. No man with a modicum of respect for truth claims that American farmers are burdened with wealth or that the rich harvests of this year will enable every land owner to start a bank. Obviously, however, the great majority of farmers are in a very comfortable frame of mind as to their assets, and they are confidently expecting to feel still easier when the net returns from their land are counted at the close of the season. It is this widespread condition of security, thrift and business health that has opened the state fair campaign in a veritable sunburst of success. If the Country Life Commission were to fly leisurely over the United States in an airship today it could see more comfort and cheer than to discourage it, and some of its observations would be as close to the ground as a few that it has published.

Had such an aerial excursion been essayed last week its participants could have spent several days very profitably viewing the Iowa State Fair at Des Moines. Here the modernized agriculture of a mighty granger state was in splendid flower. Sterling quality was combined with bewildering quantity; variety ran almost to satiety. All the gentle arts of which agriculture is the basis were represented in attractive, educational exhibits, and a record-breaking crowd of appreciative people enthusiastically endorsed a great state fair. It was a jubilant week at the Hawkeye Capital. Education was its cause and effect.

It is getting so that those who poke effete fun at the calling which George Washington declared "the most healthful, the most useful, and most noble employment of man" must travel in aeroplanes in order to look down on the farmer. Many farmers with a retaliatory instinct consider airships, in their present stage of development, suitable carriers of such jesters. But happily the great classes that constitute our complex society are becoming better acquainted with one another, with the result that the ideal of social brotherhood seems closer or larger as the years unfold.

State fairs and live stock expositions are strong factors in multiplying the contacts, broadening the interests, enlarging the sympathies and stimulating the sense of unity of the rural and urban citizens who on these occasions are thrown together with a sort of rude good nature. We must crawl over the edge of our little individual worlds in order to see what is doing in other and larger worlds. In these interchanges of personalities and ideas individuals are benefited in many ways and the world as a whole grows better. This is the way we have got to make the world better.

Often it happens that the man who regularly attends his state fair with the special object of profiting himself, gives more in help and encouragement than he receives. Staying at home can become as bad a habit as farming by telephone. Our gregarious instincts are not to be disregarded. It is good that country and city folk should commingle and hobnob as at state fairs. Orderly mixtures of people moved by purpose, curiosity and imitation represent humanity in an upward flow. It is when people begin to recoil from one another, when class avoids and detests other classes, that the course is toward dangerous ends.

Our fairs are more than exhibits of material things; they are more than instructive comparisons or schools of flowered experience. Under the eye that sees deeply they are notches on the scale that measures the progress of mankind toward a higher and larger life. Improvement in animals and plants is the effect of improvement in men. Better crops and better animals are the offspring of more thought on the part of the producer. It is safe to judge men by their works. And good works react favorably on those of humbler authorship. A superior pure-bred bull, stallion, boar or ram is of itself an eloquent lecture on good live stock. Let no one believe that the uninitiated eye of the man who raises mongrels cannot see the greater merit and beauty of creditable pure-breds.

Any man who makes fair use of hs opportunities at a cornbelt state fair will see and hear things that will creep into his practices and help in unnumbered ways. Thoughts and ideas gleaned on a teeming fair grounds will work into a man's consciousness and later prompt or direct an act of wisdom. It is not necessary for us to understand how we are benefited in these subtle ways. Our business as a people seeking better things in agriculture and in life is to give ourselves a chance to see and hear where the spread of good and useful things is rich and where the din of education, suggestion and inspiration is as a trumpet blast. Optical instruction fairly overwhelms a modern state fair grounds, and the opportunity of the ear for acquiring knowledge amounts to a rich privilege.

If we could see a fair from the vantage point which we imagine the occupier of an airship to enjoy we should certainly have much more within the scope of the eye than is possible from any terra firma position that ordinarily could be obtained. But it is the understanding that must be considered; it is not how much we see, but how thoroughly we understand and appreciate what we see that spells profit from attendance at a fair or an exposition. That enterprising individual who sees "everything" at a big state fair does not see anything intelligently. He catches the shadows but loses the substance of things worth studying. Our foremost state fairs are too vast in their areas and interests to come within the compass of any man's comprehension in a few days.

We usually gravitate to and tarry at places where our special interests are satisfied. Some have a leaning toward fast horses, so they spend most of their time in the grandstand. Others enjoy feasting the eye on horses and cattle that are shown in the pavilions. Still others pay close attention to the judging of hogs and sheep. Visitors who remain three or four days and are not tethered by some very special interest manage to get an idea of the fair as a whole and of several features in particular.

Entertainment, recreation and education are offered, and it is for each man to decide which he wants. He can get some of each if he works diligently and systematically. Those who go to have a "good time," whatever that means, are in a class which makes it difficult for fair managers to keep their grounds free from fake shows. A good time cannot include the encouragement of any unworthy thing.

Those of us who know farm life can understand why many visitors to fairs go in for fun and folly instead of facts and figures; we have left off hard work to take a rest, have wholesome fun and forget business. We can endure a deal of investigation and serious study when we find something new and interesting, but we refuse to "do" a fair in the spirit and mood of a human sponge, laboriously trying to absorb every detached fact. We insist on time for amusement—and we must have amusement. Country people take to a fair a great stock of healthy human nature which feeds on a variety of wheat and chaff—the two ingredients which figure in our several compositions. Variety indeed is the spice of life Educationally we cannot subsist on solid ham and eggs alone. With these substantials we instinctively combine popcorn, cotton candy, peanuts, ice cream cones, soda pop and the like. Mental appetites do not differ much from those of the stomach; hodgepodge is the craving of a heterogeneous people. Our fairs are what the people want. Most of them are what the people ought to have.

Fairs and shows are moneymaking investments for states. They have earned more than they have cost, and their most enthusiastic support is the profitable duty of good citizenship. It will pay any farmer to attend his state fair. In no other way can he better attend to his own business.

D. C. W

IOWA'S FIFTY-FIFTH STATE FAIR.

Half a century and five added years have contributed to the history of the Iowa State Fair, but no year has written so brilliant a record as 1909. The halting footsteps of a few years ago have been succeeded by the firm determined tread that presses irresistibly forward to assured success. Many causes combine to make this fair great but perhaps the chief is that it deserves greatness.

Conditions favoring results that aggregate in their entirety an appreciable advancement over preceding years were plainly discernible. A steady spread of the fair-going spirit has characterized the past decade of agricultural development. That spirit feeds on crop conditions. When nature frowns on the toil of the husbandman, indulgencies commonly classed as necessities are quickly transposed to the category of luxuries. A visit to the state fair is about the first to be thus reclassified. A mixed motive, in which sentiment and cash play perhaps equal part, operates in the transaction. The Hawkeye State, that ordinarily steers its middle-of-the-road course so conservatively that it is almost wholly unproductive of freaks or sensations, this year has sounded the gamut of extremes. From the drenchings of the early season to the drouth of the latter, agriculture has passed more than the ordinary number of days of apprehension. Recovery from the excess of water came quickly, aided by the energy and intelligence with which farmers of the state till their lands, but against the drouth with which the season is drawing to a close they are practically helpless. The northern part of the state has small complaint. It is "bumper" year in many sections lying to the north, but farmers in some of the southern and southwestern parts are obliged to feel content if they fall a little short of an average corn yield, so severe has been the drouth. On a whole, however, it seems a fair estimate to class Iowa among the states of more than average production for 1909, and this fact found reflection in the attendance than overran records.

The fair-going spirit is stimulated by the attractiveness and adequacy of fair ground equipment. While Iowa has not worn ten-league boots in its forward strides in state fair rebuilding, it has made that steady and substantial progress which bespeaks provision for the future. Temporary construction finds no place in the plans of the managers of this fair. Lumber contractors deal little with them nowadays. Structural steel mills, concrete workers and brick makers now make bids on the plans for the improvements of these grounds. Last year's construction account approximates a total of $150,000 spent. The new steel and concrete grand stand, with the removal of the half mile track, accounts for about $100,000 of this amount. Eight sections out of the contemplated 15 in the grand stand have been completed—a little more than half of the final size. The swine judging pavilion, which was little more than walls and roof, has been finished with one side devoted to amphitheatre seats and a full complement of judging pens, and now presents the most complete and comfortable arena of the kind in this country. It required around $7,000 for the finishing touches on this building. A balcony was thrown across the south end of the agricultural building, at a cost of $3,200, materially increasing the exhibition space. Alterations and repairs on the poultry building, with new coops, required about $2,700 of the board's funds, and $2,500 was spent on cement walks. The new vehicle barn, used temporarily for horses, cost about $5,000 in its incomplete form. When finished it will be used to store the vehicles needed for the horses shown in harness, but this year it was full of horses in temporary stalls. A new cattle barn, uniform with the comfortable brick structures which have preceded it, completed a highly creditable building record since the last show.

It was a big year's work, and every penny appears to have counted. The face of affairs has been most changed by the removal of the race track and the speed barns, and the construction of the magnificent grand stand. A noteworthy improvement, one which is not apparent to the public, was the finishing of the second story of the administration building into 35 bed rooms, for the accommodation of the members of the board and their helpers. Now the men who manage the fair are really quartered on the grounds as comfortably as the animal exhibits. The advent of the two big night shows required many of them to be "on the job" night as well as day, and the concentration of the management in the administration building is a great saving of time and effort.

Every promise of the earning capacity of the new grand stand has been completely fulfilled. The investment will prove very profitable. It will require the addition of the contemplated seven sections to meet the demands that will be made on it. It would seem impossible to devise a structure better suited to the purpose. From every seat, either in boxes or the top tiers, the survey of the track is perfect. The chairs are very comfortable and when all appointments are completed, it will represent the highest possible attainment in such an endeavor. The large paddock between the stand and the track will hold thousands of those who desire to get as close to the race course as possible, and now serves as an exhibition place for the light horses in harness.

The rear of the stand will be finished in two stories, affording a great expanse of very valuable exhibition space, and promenades and rest and lunch rooms. It is doubtful if a structure of this character has ever been erected which will prove a greater revenue-producer on the investment than this new grand stand.

Probably the sheep stand next in line for a new home. They need it. Across the main entrance from the swine pavilion, the wonder of all visitors in its extent and the permanence of its construction, a site has been chosen for a sheep department similar in design to that provided for swine although much smaller in scope. It is hoped that this building may be erected from the profits of the fair, although this board never counts its chickens until they are hatched and awaits the balance sheet before making definite promises. The extensive unprotected machinery exhibits cry aloud for a shed, and plans are drawn for a serviceable shelter for this department. When the weather permits a maximum attendance the profits of each fair will go well along toward improvements, but such drafts as those of this year must be made on the public purse. On Wednesday Governor Carroll and more than 60 members of the legislature which had generously provided the funds which have been so judiciously expended, had much pleasure in reviewing the work of the board and taking personal stock of the tangible account given of their stewardship by these faithful public servants. This demonstration is certain to afford a receptive hearing when the board presents the further needs of this state institution to the attention of the men who order the public affairs of the commonwealth.

So much for the shell. What of the fair which the shell housed? All sections cannot be maintained forever at a maximum. The industry is subject to many fluctuations which would militate against such a result. In broad survey, this was the best which the years have given attendants of the Iowa State Fair. There was a little weakness in the beef cattle section, counterbalanced by a record breaking dairy cattle show. A little slackening in two of the draft breeds was more than offset by astonishing exhibits of two other breeds. Light horses and ponies were notable. Swine were fewer in numbers, to the betterment of the average quality, and sheep overflowed into a few vacant swine pens. Some of the big threshing outfits were absent from the implement field, but the total number of exhibitors was greater than ever before. Agricultural exhibits made decided strides forward toward the goal which the greatness of the state has naturally set for this fair, and the exhibits of subsidiary interest were of gratifying volume and character. The record was one that appealed to the state pride of every Hawkeye, and clinched the demonstration that the present managers of the fair are succeeding admirably in their energetic and intelligent attempt to live up to their obligations and opportunities.

Iowa's agriculture was typified in the agricultural building. For some years past the agriculture of the enterprising Northwest has been dominant in it. Certainly these bright-minded breezy men from the pioneer sections know a good thing when they see it. They are not to be blamed for displaying their attractive wares, unimpeachable evidence of the richness of virgin soil, in the most desirable space in Iowa's agricultural building. They could not get better advertising space. But "home firsts" is a pretty fair motto in such matters. In sharp contrast with some preceding years, more than 600 Hawkeye farmers were represented by farm product exhibits in the agricultural building, and the proselyting exhibits from the Northwest, our newer states and Canada, were under tents, at so much per front foot for exhibition space. Even Uncle Sam, with his thoroughly staged bid for settlers on land under his reclamation act, rented space under a tent. This is as it should be.

A change in administration of the agricultural building, the increased space afforded by the new balcony, and the very material help of the agricultural college, transformed the exhibits building, and it was eloquent with arguments that proved the fertility of Iowa soils and the progressiveness of its farmers. County exhibits were multiplied, and the attractiveness of this feature is sure to expand it materially at coming fairs. Alfalfa was emphasized in right royal fashion. It was needed. Some farmers passed the exhibit who were minded to quarrel with the attentive young men who were there to answer questions, and denied that Iowa could raise alfalfa. But the ocular demonstrator was unanswerable. Along with it went the facts from each farm which had contributed a part of the exhibit. The varied production of the state was plainly shown throughout this building, and it is certain that demands for room will require all floor space for exhibits which classify as strictly agricultural.

The Iowa State College at Ames was assigned a special building, up on the hill, and one of the most comprehensive exhibits of an institution's scope was presented. Each division of the college work was allotted a section and exhibits were set forth in orderly and instructive array. It was possible to grasp an idea of the work through an inspection of the exhibits in the various sections. The domestic science department kept open house and made almost continuous demonstration of the character of the instruction given farmers' daughters at the college. Over in the poultry building, Ames submitted one of the most attractive exhibits, detailing the process of incubation, and illustrating model henneries and appurtances of the poultry yard. It is hoped next year to expand this college exhibit to include live stock and judging instruction, although the fair has made such liberal drafts on the college force in executive positions that it would seem difficult to conduct a special exhibit of this character.

Ever the effort is toward the conservation of labor on the American farm. Inventive genius has been taxed to its limit to make machinery do the work of men. On such an exhibition ground this fact is driven home. It is reported that the big thresher outfits have agreed to remain away from the fairs for a certain number of years, and their absence from Des Moines robbed the machinery section of much of its spectacular feature, but a few separators were nevertheless on the ground, and the multiplicity of farm implements of smaller size was altogether bewildering. In pavilions and exhibition halls built by private enterprise, under canvass that spread its generous expanse of protection, and out in the open, the sections given over to farm implements were fairly congested. It would be impossible to list them. Novelties were not numerous, but improvements were presented in some of the older forms of implements, and the field was broadened to include all kinds of fencing, tiling and road making machinery as well as the implements that the individual farmer uses. It is worthy of note that a road drag made on the principle of the

King drag has now been built of steel, and equipped with control levers and a seat for the rider. Perhaps now that farmers can buy a drag of this character they will put more of them in use than they have had when they could build them for less than $5. With the steady increase in the dairy industry in Iowa, it was not strange to see strong exhibits of silos and silage machinery. The adjustable wagon box claimed attention as a new time and labor saver. As in other recent years the manure spreader was the most conspicuous feature of the implement exhibit, with the exception of the gasoline engine. The ceaseless "cough" of the gas motor sounds throughout the grounds. Every exhibitor who has an implement that "works" uses an engine to keep it going. The explosive engine is easily the dominant exhibit at our modern fairs in the implement section.

And the auto was numerously represented in exhibits, and yet more numerously in evidence on the grounds. Exhibitors of swine and sheep came to the fair in autos and parked them around these departments. They were thick around the judging pavilion and the cattle and horse barns, and all over the grounds it was one continuous warning "honk" of the auto horn. But the auto drew off second best in a contest for public favor. The six-horse gray team of Swift & Co., had been hitched up in front of the stable and was blanketed a dozen deep with admiring humanity, when along came the newest thing in farm tractors, snorting and chugging down the drive and dangling a placard declaring that it carried 30 horse power. It noisily passed the crowd gathered about the team of dapple grays, and not a head was turned to see the machine. Down the street went the driver and turning, stopped beside the horses in harness, but the only spectators the tractor drew were those who watched in amusement the vain efforts of the machine to draw attention from the horse, and interpreted it at its true significance.

The camping feature grows in popularity. Considerably more than a thousand tents were pitched up on the hill set apart for this purpose, and numerous canvas-covered moving wagons, reminiscent of the prairie schooners which traversed the plains in the later pioneer times, were parked in this section. This feature has met with much favor, as it affords a comparatively cheap method of making a week-long stay on the grounds. Ample provisions may be obtained. Indeed, the array of eating houses suggests that hunger is as needless on these grounds as starvation is remote from the Iowa farmer.

An "expurgated edition" of one of the big amusement shows was tucked away in a corner of the grounds where it would require a search warrant to find it. Twice was the most rigid scrutiny given these exhibits, and about half of the shows on the train lay outside the ground as rejects. The fat woman was there, but not the "snake lady." Thus sharply was the line drawn, and thus closely was approach made to the enlightened public sentiment which applauds the total exclusion of such amusement features. Near the main railroad entrance was the Indian camp, a feature which possesses a world of interest and instruction to young and old. Entertainment features of this character find proper place within the confines of a fair.

The matter of transportation has here about as satisfactory adjustment as at any fair. It is an evil day when a trolley line builds to a state fair grounds, but it is idle to fight against it. The Rock Island road is entitled to credit for keeping its train service at a high point of efficiency, despite the sharp competition of the street cars. The crush in the street cars reached such a pitch of indecency and danger as to call forth a rebuke from the cartoonist of the leading Des Moines daily paper. It is singular that people will subject themselves to such indignities and danger as attend the herding of humanity into street cars at fair time, to save five cents fare, but humanity is somewhat odd at best. There were times when a few more cars on the steam road's trains would have been acceptable.

Figures of total attendance are not yet at hand. Some little padding was given the official count by the city dailies, which was quite unnecessary, as the turnstile count was creditable enough. The paid attendance on the opening days—Friday and Saturday and Sunday continues to grow steadily, and it seemed that the climax of the week was reached on Tuesday, old soldier's day, when the count fell only a few hundred short of 60,000. Wednesday's record probably equaled it, but the rain on Thursday morning cut what should have been the maximum attendance in the history of this fair. Ideal weather up to that time awakened hope that the week would pass without the usual downpour, but the fair seems fated in this respect. Its annals include many a day's receipts materially lessened by rain. The rain was welcomed wherever it fell, and in its sweep eastward from beyond the Missouri it left thousands of dollars in farmers' pockets, but dipped rather deeply into the coffers of the state fair. The skies cleared by noon, and people ventured out, as the substantial buildings and new sidewalks make sight-seeing pleasant even in inclement weather, but the track was too wet for use. Friday promised fair and should have added its quota to the profits of the week, which will amount to a very gratifying total, despite the loss of Thursday's receipts.

It is easy to contract the night-show habit at these fairs. The grand stand spectacle, concluding with its brilliant fireworks, taxed the increased capacity of the new stand. Over in the stock judging pavilion, a dazzle of light and the most interesting activity succeed the gloom and stillness of former years. Last fall night shows were staged in the pavilion for the first time and leaped into unquestioned popularity. They were repeated this year, although on the opening night an accident to the electric light plant compelled the abandonment of the exhibition. To the beautiful parades of horses and cattle were joined the six-horse teams of Swift & Co. and J. Crouch & Son, and the ox-team with Red River cart and prairie schooner of almost pre-historic day. Some trick horse stunts and a few other features furnished that variety which seems to be desired by fair goers, especially at night exhibitions. These pavilion shows attain great popularity.

The catalogue may well serve as a model for such fairs. While the live stock entries are compiled with more than usual care, the book contains also a large fund of information suited to the needs of the visiting farmer and his family. The work of the fair is programmed throughout, and also the attractions. A number of meetings of various kinds are called for the grounds, and full information concerning them is furnished in the catalogue. While the fair grounds are thoroughly covered, the compilers have gone further afield and submit a very valuable lot of information concerning the city of Des Moines, its churches, schools, industries and amusements, together with a map showing street car routes, with specific directions for reaching all points of interest in the city by street car. It is a valuable hand-book for all fair visitors.

In its stock exhibits Iowa has excelled for long years. Occupying the commanding and coveted position at the opening of the western circuit it has summoned herds and flocks from widely severed sections and united them in an initial presentation which has always held the keenest interest for breeders. From Pennsylvania to Kansas, and from Kentucky to North Dakota marks the sweep of the exhibit this year, a scope in itself significant not only of the popularity of this fair, but of the breadth of the interest in the exhibition of pedigree stock. Statistics from the entry books reveal healthy growth. Nearly 200 more horses than last year were stabled on the grounds, and about half a hundred more cattle. Swine breeders of the West made such inordinate demands on the costly quarters in the new swine building shipping carloads of pigs for sale purposes only, that last year space restrictions were imposed, and this, combined with a light pig crop and high priced feed which induced early marketing, occasioned a little reduction in the number of entries. The sheep promptly overflowed into the vacant swine pens, however, showing some little advance in numerical strength.

Appreciated progress has been made in the rebuilding of the stock section of the grounds, but the marked contrast between the remaining cattle and horse barns of a decade ago, and the commodious, substantial and comfortable brick barns of the rebuilding period indicates the desirability of pushing reconstruction as rapidly as possible. With improved accommodations, doubtless yet further increase in entries will follow.

The enlargement of the judging pavilion, demanded years ago by the popularity of the structure, awaits only sufficient funds. By a judicious division of the arena, alloting it to the horses in the morning and the cattle in the afternoon, the dangerously congested condition against which protest has been repeatedly made at some fairs, is avoided. The plan obviates one difficulty, but it prolongs the judging until late in the week, and does not afford spectators that variety of exhibition which they naturally expect in an arena of this character. Seats are usually at a premium in this pavilion from 9 o'clock in the morning until the crowd thins for its homeward journey toward the close of the day. During most of the time the seats and aisles are uncomfortably crowded, and regard for the comfort of the people and the educational value of the exhibition, saying nothing of the demand for increased room at the paid night performances, requires attention as early as possible to the enlargement of this popular building.

Conduct of such an arena could not be better. Movement is frictionless. Stock is handled into and out of the ring without delay and the work proceeds as rapidly as the heavy classes will permit the judges to work. The arena was kept cleared of spectators. The favored few admitted through the gates were confined closely between lines of chains stretched through the center, so that at no time did the work of the judges suffer interference. Even press reporters were restricted so closely to the lines that a detailed report of the prize winners would be impossible. After the ribbons were awarded those in the arena were allowed a brief examination of the winners. The improvement over the former congested condition while the judges are at work was marked.

In the matter of judges, Iowa sets an example worthy of emulation. The members of the board have no political debts to pay in the selection of judges. Friends and neighbors are not given a free visit to the fairs. The aim is to select men wholly able and experienced, and the field is not limited to the borders of the state. Three of the judges this year were drawn from Ontario—one in the beef cattle section, one in the sheep and one in the horses. It is refreshing to find a free hand in choosing judges, and a personal knowledge on the part of superintendents of men qualified for the responsibilities of the position.

THE BEEF CATTLE DIVISION.

Interest was unflagging in this section. Numerically strong for the most part, it showed its spots of weakness in some breeds, but animals of unsurpassed strength were present in nearly every breed. The arena was kept full at all times; indeed, the beef cattle encroached somewhat on the side allotted to the dairy cattle, and so large were the entries of the "milkers" at this fair that the arena was rather crowded at times. This year marks the retirement of ex-Gov. S. B. Packard from the superintendency of the beef breeds, a position he has occupied for years with signal satisfaction to all parties in interest. Iowa loses Gov. Packard to the Pacific coast. Last May he removed to Seattle, but returned to round out his year's work at the fair. His executive ability, his breadth of view, his eminent fairness and his close personal touch with his department have won him place among the fair superintendents whose work lives in grateful memory.

THE SHORTHORNS.

With eleven herds, lined up for adjudication at the close of the showing, it cannot be said that the breed was behind its average in numerical strength. The classes restricted to Iowa entries bring out a full showing, although it is not to be expected that these contributions as a whole will average up in character with the specially fitted herds which make the circuits.

The acceptable work of Capt. T. E. Robson, London, Ont., at the fair of last year resulted in his return to the judge's box, and his decisions as usual commanded respect as emanating from a discriminating and seasoned judgment. It cannot be said that he had the easiest of times, for some classes presented the most difficult of all allotments, when outstanding merit is not carried by any animal and types are in somewhat sharp contrast. The bulls have been stronger in this arena, especially in the older classes. While for some years we have had the most encouraging promise in the younger male classes, yet the winnowing process of time lands only a few of them in the older divisions.

The aged bulls aligned no wonders. Easily at the top was Sidelight, a son of Royal Wonder and the famous Lady-in-Waiting, and a bull of much claim to showyard distinction in his scale and levelness, his grand top and his attractive front, and with the finish which the season will afford he will grow yet stronger. Nonpareil Marquis is a roan of neat turn and tidy finish, while Snowflake, with his attractive white color and good lines, wants more spread of forerib. On the whole the two-year-olds were a better class, but some rather rough specimens detracted from the evenness of the array. King Cumberland, champion of last season, assumed his rank without question. His new Kentucky home has evidently agreed with him, as he has grown on quite evenly, and is presented in prime herd condition, without attempt at forcing. If exhibitors could be induced to come to this sane fashion of showing, we should hear less complaint against the obese bull. King Cumberland seems to improve in attractive finish and went on his winning way to grand championship. Gallant Knight's Heir is a round-built, smooth-turned red, and Count Abbot is a red of considerable scale and levelness. The senior yearlings sent to the front Red Marshal, which carries fine promise and present strength enough to class him among the top ones. It is greatly regretted that Leader of Fashion, under whose excellencies Red Marshal was a bit obscured last season, and which rounded out his precocious career with the Denver championship, has been put out of the show class by his sire, old Whitehall Sultan, which nearly killed him in a fight. Leader of Fashion seemed entitled last season to be classed as the best son of Whitehall Sultan of his age, and his loss to the showyard is keen. The junior yearlings were a larger lot and contained some youngsters of gratifying excellence. Elmendorf Marshall looks a lot like his sire the champion Whitehall Marshal, and ranges among the most select of the young bulls out this season. Ammunition to last the breed a while if properly used was uncovered in the large class of senior bull calves, which was headed by Broadhooks' Best, one of the most engaging of the calves that have come from Anoka. He is a very thick and growthy red and white, with great loins. Regulator is a real good roan block.

Inasmuch as Capt. Robson has sold Queenston Bellona, one of the contestants among the aged matrons, he asked the assistance of Robert Copland, Ellon, Aberdeen, who came over to judge the Clydesdales at Toronto, and was an appreciative visitor at this fair. Although a grand big light roan cow, full of substance, Bellona fell back before the familiar white Sinnissippi Rose, of somewhat more modern type, and sweeter front. She has certainly come into a very attractive young cow. The Choice Goods cow Village Belle 3d wants better development of hind quarter, else she would have topped the company, as forward of the hips she is a pleasing model. The two year-olds made a large company and averaged well, and concerning their arrangement there was latitude for difference of opinion. The dark roan Christmas Lassie is much of a model from hook bones forward, splendidly turned in middle and forend, but somewhat lacking in rump and thighs. Snowbird is a remarkably flanked white, with great ribs and a handsome front, and Elmendorf Lassie carries into this year the excellencies which distinguished her last season. The galleries took a little hand in the game while the judge worked well front from a place down the line the handsome roan senior yearling Woodhill Belle 2d. Barring a little height from the ground she withstands inspection well, as her lines are attractive and her color flash. She got the "glad hand" from the gallery as often as she was moved up. The egglike red Vanity had friends for position higher up. No one could deny the scale, the thickness and the depth of the blue ribbon heifer Anoka Aconite, but somewhat of hind quarter deficiency gave some ground for other preferences. The junior yearlings proved a strong class and furnished perhaps the only sensational feature of the Short-horn showing in the roan Miss Marshall 2d. Colored in the richest of evenly-mixed roan, shaped like a Short-horn from head to heels, and well grown, this miss captured all hearts. Her owner refused all covetous offers for her. Sultana is a beautiful heifer on the blocky order, with a front of rare sweetness, and Cheerful 7th is a pleasing roan. The senior heifers were the strongest in numbers and quality of any of the breed's classes. It was a rare sight and awakened much enthusiasm. The leader was Marshal's Strathallen, a classy light roan from Elmendorf. Juniors were fewer in number but of prime character, and were suitably headed by Sultan Countess, one of the choicest of the famous old white bull's progeny, and one of a group of four heifer calves which gained the progeny prize for their size. Another white, and of similar blood, stood next, the handsome Marshal's Queen.

THE HEREFORDS.

The Herefords carried distinctly the honors of the beef cattle division. The entry list was so liberal that naturally some scaling down of average excellence would be expected but it held at high range. Astonishingly few were the inferior animals from start to finish of this exhibition. Not only was the average good but it was high. The topnotchers set a mark quite high for the beginning of the season and most of the others in each company were entitled to consideration. Perhaps the master artists of the Hereford grooms have never surpassed the early season bloom which their charges reflected; certain it is that most of them were "done to a turn," and with some it is a question whether condition can be evenly maintained for the three months which intervene between the opening of the season and its close at the International. With that we are the less concerned because almost wizard-like ability has been repeatedly manifested in this matter by the herdsmen who finish these marvels of obesity. It is enough to record that the "white-faces" were palpably the strongest breed on the ground in showyard character and finish, and that the average of excellence ran higher in almost every class. It was a highly creditable exhibit from the showmen to whose faithful, enterprising and persistent effort is due in great measure the popularity the breed has obtained in this country.

Awards were made with the greatest care by Thomas Mortimer, Stanton, Neb., who found that currents of opinion ran very little diverse among those who witnessed his work.

The "little bull"—with the great weight—maintains consistent place through his long public career. Prime Lad the 9th is again at the head of his class and champion, heavier than ever, and a wonder of massive body on short and fine-boned legs. Governor carries more scale, his flesh is evenly distributed, and he stands a shapely well-grown smooth-turned bull. A little more breadth at the tail head would improve Dislodger, which is a low and thick-set bull, but he deserved his place above the more massive Onward 31st in respect of head and hocks. The two-year-olds make an impressive array, and Principal 6th, chosen for the head, is a bull of superior form, flesh and finish. He has a grand top and is very even from end to end. Curtis is endowed with ample scale, with evenly turned frame and considerable bull character. Somewhat off type in size appears Prime Lad 38th, a tall and massive young bull. The captain of the senior yearlings was Repeater, the calf which in the Heath herd last fall drew many ribbons. He is about the sort they try to make when they make them as good as they can. The junior yearlings contained some good ones and a few that did not average high. Among the lot in fifth place was a Polled Hereford, which commanded quite a little favorable comment. The senior bull calf class quickly pulled back into place, with its fourteen entries of acceptable merit. The juniors were perhaps not quite so strong but included some promising youngsters.

Among the fourteen aged matrons one of the determined struggles of the day ensued between Margaret and Miss Filler 2d, both of them fitted to the minute and plainly among the best which the breed has shown in recent years. The Prime Lad daughter, with her superior hind quarters, gained the day. Perhaps more than usual of sub-standard animals appeared among the two-year-olds, but this may be because we always expect the culmination of the breed's show in this class. A double quartette of them filled every expectation, and at the top was found Princeps 7th, a full-made round and evenly turned daughter of Princeps 4th. The Prime Lad heifer Iva has more scale, and is more upstanding, with remarkable spread of rib, in which respect she had the better of Harris Princess 34th. The senior yearlings made a dazzling show with the warmest of contests up toward the head and the junior yearlings maintained the reputation of the breed. Lady of Grace 3d is on the nugget order, a stamp which distinguishes the get of her sire Beau Paragon, which were shown here by Makin Bros. Harris Princess 50th is a real chunk and Miss Brae meets you with a beautiful countenance. The senior heifers were out in large numbers and of impressive character. The head of the junior calves was another nugget, Gladness, which won her way to the hearts of all, not by reason of size, but accuracy of fashioning.

THE ABERDEEN ANGUS.

Strict regard for the facts of history requires the record that the "doddies" fell somewhat below the standard of the breed at this fair. Of course that standard has been a high one, about as high as it could be set, and hence it is not difficult to fail to attain it; but neither in the numerical count nor in the quality estimate did this show of Aberdeen-angus rank with some of its predecessors in this arena. All breeds have their periods of relaxation and this was one for the Angus. Now the man who draws inference from this that the exhibit was inferior takes unwarranted liberty. It was simply not up to its standard, which had been advanced to a high point in this state. Stanley R. Pierce, Creston, Ill., began the work of allotting positions, but after the matron class had been disposed of, he was summoned home by sickness and Charles Escher, Jr., finished the task.

Glenfoil Thickset 2d, massive and quite fresh considering his career, readily topped the aged bulls, which was not a hard lot to beat. The three two-year-olds presented somewhat of a step-ladder appearance in height, with Oakville Quiet Lad at the top, a bull of nice lines and character. Quality Prince and Prism held a little family discussion in the senior yearlings. The former had the better of it in the buttocks, the latter through the front end, but the judge hit upon the home rating of them. Thickset Blackbird, winner of a year ago, has come forward nicely and led the juniors, a feat not at all difficult. Cinch, the winning bull calf, is a great block, quite wide and thick, but somewhat inclined to roughness.

The awards among the matrons ran quite counter to outside opinion. The McHenry and Binnie cows which were popular favorites, were considered overdone by Mr. Pierce, but it seemed a case of overdone or underdone. This was perhaps the strongest lot of the breed and it is likely that Pride McHenry 53d was the outside favorite, although landing fourth on the list. She is smoother in the hind quarter than Abbess McHenry 6th The winner Queen Lass of Alta 3d had a calf at foot, and is a nicely-fashioned cow back to the hips, but wanting palpably in hind quarters, and naturally not in forward condition. Gay Bonnie Lass is a very shapely cow, perhaps the most symmetrical of the lot, but decidedly wanting in width and condition for such a company. The best of the females was the two-year-old heifer Barbara McHenry 24th. She has that cylindrical smoothness which distinguishes the breed in its best estate, and is altogether prime. Blue Grass Ridge Drucilla is a very sweet one. The senior yearlings were only a fair lot but the juniors came a little stronger although nothing of a sensational nature was revealed in the younger classes.

THE GALLOWAYS.

Galloways were not out in large numbers as only three herds were represented; nevertheless the quality was good. They were mostly in good show condition and the silky quality of their long coats showed that each herdsman had used skill in his finishing touches. E. T. Davis judged this breed to the general satisfaction of all. The first ring brought in the great bull Captain 4th of Tarbreoch that was first as a two-year-old last year. Age has improved him if possible, and he surely looked fit for any competition, but nothing was brought out against him. Two grand low thick smooth two-year-olds, Douglas of Meadow Lawn and Noble Standard, ranked the same this year as last. The yearlings were a soggy thick fleshed bunch, all except the last one being very near the ground. Sadie of Meadow Lawn led the cows and furnished a good pattern for the females of the breed with her smooth thickly covered back and thighs completing a compact form, carried on short legs. Among the two-year-olds Vinola 4th of Maples came out in better form than last year, clearly surpassing Lily May, which stood above her last season at this time.

THE POLLED DURHAMS.

The Polled Durham show was an all Iowa affair with only herds from within the state competing, and L. G. Shaver, Kalona, Ia., experienced and successful as a showman of the breed, judging the entries. Numbers were not large but most of the classes furnished distinctly toppy material for the leading places although some poor ones trailed along behind. The breed is firmly established in Iowa on good foundation stock. The breeders are loyal to their interests. Some of the herds represented this year have suffered from pink-eye this summer so that it was impossible to put their cattle in the best form, but as Mr. Huntley explained, they came along anyway to sustain the show. The judge knew the thick-fleshed, strong smooth type he wanted and adhered to it clearly. Quick work and accurate placing marked his judging.

Sugar Hill Marshal clearly merited the distinction of heading the aged bulls. He was brought out in excellent form and carried a wealth of flesh evenly and smoothly. The judge considered him the best bull of the show and made him champion. He had to be good to beat Amity Prince, a short-legged three-year-old with strong level top and good character, but lacking a bit of the flesh he might have carried. No two-year-olds were shown. Lord Vellum, a big lusty roan headed the yearlings and looks the making of a good breeder. Only two cows were brought out but they were good ones. Scottish Belle 4th is a smooth, square ended big cow. Last year she stood second here. She is of a strong type combining size with quality. Buttonwood Glade 3d is a beautiful yearling, thick and meaty, close to the ground and smoothly finished—a good kind for the championship.

THE RED POLLS.

Red Polls were represented by some of the best dual purpose types ever seen and by some of the kind that look trashy and cheap in good company. As is unavoidably the case with this breed there was great variation in the amount of flesh carried in the aged cow class due to the effects of lactation. But this in no way excuses the poor bloom in which some of the bulls and younger heifers were presented. Prof. Wayne Dinsmore did the judging with painstaking attention to the dual-purpose type of the breed. It is difficult to follow between the two extremes of type without striking either one, but there was a general feeling that this attempt was quite successful. The massive deep-chested Durock placed at the top of the aged bulls was criticised by some for being beefy. He was in better bloom than his competitors, one of which Logan stood above him here last year, but his outlines, long rib and open twist suggest unmistakably that he is the kind of sire that gets good milking heifers. He is a good dual purpose pattern. Logan was thinner and lacks the depth of barrel carried by the champion. The strong-backed bull Rutland has indications of carrying good milk producing blood.

The aged cows were a matronly lot, exhibiting in first and second places the difficulties that beset the judge. Cora 5th was in milk and much reduced in flesh. Inez was dry and fat. Still as the two stood side by side it was plain to see that the smooth frame, the neatly covered hips and moderately sprung ribs of Cora needed only feed and a cessation of milk-flow to cover them with fat. The two gave a good demonstration of the extremes in appearance of good dual purpose cows when milking and when dry. Cora 5th carries a capacious udder and although she is eight years old, her back is strong and straight and her quality the best. She was clearly ahead of anything in the show in dual purpose type.

THE HOLSTEIN-FRIESIANS.

The Iowa herds were handsomely matched by the Holsteins from the noted herd of F. P. Knowles of Massachusetts. He brought championship material with him and found competition worthy of it. Prof. H. G. Van Pelt distributed the prizes conscientiously. He had two difficult tasks in which competition was close and much interest hung in the balance. Artis Mercedes Posch came from the East without a defeat to sully his reputation. In Canada and New England he has been a winner. Strong, forceful, angular with deep barrel, open twist, large rudiamentaries and veins, he was ready to claim the top. Dijkstra Beauty Lad is neater of head, wider of chest, more capacious of middle, finer of quality and equipped with better placed if less prominent rudiamentaries. Popular approval went with the decision which led him to the championship. Among the Massachusetts cows, Huntress C is a wonder, a veritable milk machine. Her udder is capacious, her ribs very deep, her quality good. She freshened during the show and was not quite at her prime. Parthenea Hengerveld from the Home Farm herd is a little less delicate type of cow, wider through her chest and flank and carrying a better quartered udder. She won the initial decision which put her in line for the championship later. Taken altogether the Holstein show was very strong in the quality of the entries. Pronounced dairy type and good quality was everywhere apparent. The young things were shown in good growing form and some of the youngest heifers exhibited remarkable udder development.

THE GUERNSEYS.

No better show of Guernseys was ever seen in the West. "Better than their showing at the National Dairy Show," remarked the judge. The breed is rapidly gaining popularity among dairymen who are aiming at big yields of rich milk. It is winning its way by performance at the pail. One of the leading bulls had up to a short time ago been heading a grade herd. His heifers were uniformly deep milkers so pure bred cows have been secured to found a herd. Selection for performance necessarily leads to less uniformity of conformation and size than is the case with breeds having an established showyard type, so the exhibit was less striking from an artistic than from a utilitarian point of view. Vigor, quality and dairy capacity were sought by H. G. Van Pelt, the judge. The size of this show is indicated by the entries. Eight strong aged bulls competed and other classes were filled in like proportion. The fair management has wisely put the Guernseys on the same liberal classification as Holsteins, giving five good cash prizes in each class. With this favorable beginning Guernsey breeders feel greatly encouraged over their prospects.

THE JERSEYS.

Th Jersey show was confined to three herds, but there were some truly great bulls and cows shown. H. G. Van Pelt made the awards and insisted on utility. The show yard type is with him the useful kind. Long distance yielding capacity was sought in the winners. No point was overlooked that might give an inkling of every animals' real character and when the job was done there were reasons at hand for every decision. An impressive bull was found in Victoria's Champion Lad from the Nebraska herd. As a dairy type he looks the part of an impressive sire of deep milking, vigorous heifers, and bore off the championship honors with dignity. Two especially grand old cows lined up among the matrons and quickly went to the top. The fourteen-year-old Jersey Dairy Maid carries a depth of rib and flank rarely found and an udder that extends forward and backward to a tremendous degree. Long milk veins, increase in tortuousness by long years of use, complete an imposing picture of dairy capacity. Her quality is of the refined Island type and there was no breath of dissent when she was crowned champion female of the breed. Pedros Lovely, a nine-year-old stable mate was another of the great producing kind, equipped with great capacity for feed and for milk making. These two were outstanding examples of the degree to which dairy powers may be developed, and comparing them with their contestants down the line they enforced the thought that this super-excellence is rare and difficult to produce.

THE AYRSHIRES.

This year the classification afforded sufficient inducement to bring in the Ayrshire herd of Barclay Farm from Pennsylvania. Few herds of the breed exist in Iowa. Everyone was interested in them, as they well might be, for this show herd has been carefully selected and is representative of the excellencies of the breed. It was indeed a beautiful sight made by this herd of uniform type with upturned horns, compact smooth bodies and prevailing white, spotted with just a little color. The bulls are vigorous, masculine, aggressive, nervous chaps; the cows, low set, wide through the chest and flank, with great spreading udders clinging close to their underlines. Even those milking heavily carried a covering of flesh, indicating their good dual purpose character. The 26 head made a full show of great educational value and a credit to their breed.

THE FAT STEERS.

The classification of fat steers has been extended this year to provide for the showing of grades and crossbreds of each breed separately instead of collectively as were formerly done. This gives owners of grade steers a splendid opportunity to show their cattle to advantage. The prizes for the grades of each breed are the same as for the pure-breds. This liberal attitude of the fair management will undoubtedly encourage a larger entry of grade steers another year, since the advantages of showing in this section are now apparent. This year some of the classes failed to have a single entry. Even with this failure of the extended prize-list to be fully appreciated there was altogether a fairly good show of steers. Over a score of steers, purebreds and grades, appeared before the judges. There were no sensational animals, but the general quality was good. Shorthorns shown by J. R. Peak & Son, and W. H. Dunweody, and Angus shown by W. J. Miller were the largest displays and the center of interest among the fat steers. The grand champion of the show was finally located in Miller's grade Angus two-year-old My Choice, a good, smooth, blocky fellow.

TEST OF MILCH COWS.

The three days' test of milch cows was conducted by Prof. H. G. Van Pelt. The rating was based on the yields of butter fat at 25 cents a pound and skim milk at 20 cents per 100 pounds. Awards, 1 and 2, Barclay Farms on the Ayrshires, Finlaystone Cherry 6th and Barleith Snow Drop. 3, W. B. Barney & Co., on the Holstein Wietske Ormsby. 4, F. P. Knowles on the Holstein, Hospital Pledge.

THE SWINE SHOW.

The swine department was one of the busiest of the entire fair. Nearly all the pens were filled and visitors and exhibitors swarmed around them. The great swine building is so well arranged, so light and airy, that it is an attractive place for visitors. Some that were not especially interested in the hog exhibits sought the shady passages between the pens in going from one part of the south grounds to another. These with those who were studying hogs in particular made a good crowd about the pens much of the time. Hog exhibitors have a fortunate and attractive location that makes their stay at the fair more interesting and more productive of business than the less modern accommodations with which they were supplied before the new building was erected two years ago.

Substantial improvements have been added to the hog judging pavilion. Raised seats along the south side give ample room for spectators to watch the judging in comfort. Those who formerly bewailed their inability to get a glimpse of the judging found great satisfaction in these new seats. A complete system of holding and judging pens has also been placed in the arena. Exhibitors can now show their animals in comfort without following them about with hurdles, and the trouble from hogs getting mixed and stirring up fights is removed. The judges' work is greatly facilitated by the new arrangement. The confusion of the old way of showing was very annoying. When large classes of hogs were in the ring it was almost impossible to avoid slighting some luckless hog that persisted in shifting his position so that the judges got little sight of him. Now he stays where he is left until the judge drafts him for the short leet. The pens are solidly made with strong, securely fastened gates. Yet of course they do not satisfy everybody. Exhibitors complain that the partitions are one board too high, so that they are compelled to climb over or open the gate when they would prefer to step in or out of the pens at pleasure. This complaint comes only from fat hog breeders. The bacon men admit that low fences are not for them. These partitions that looked so needlessly high when the Poland-Chinas and Duroc Jerseys were under judgment actually looked low when Tamworths stretched their backs up above them. The better system made possible in the judges' work by the use of these pens should add to the accuracy of their decisions. This seems to have been the case, for this year there was less than the usual complaint that some hogs had not had a fair show or were lost by the judges.

The quality of the hogs averaged better than in previous years. There was less space occupied by cheap sale pigs, and top show hogs were more numerous. Although the diminution in sale pigs cut down the total hog entries a trifle as compared with last year, there was really a greater number of choice hogs in the pens. Breeders have the material to supply a healthy fall hog trade.

Duroc-Jerseys eclipsed all others in numbers. There were nearly as many exhibitors of this breed as of all others together. Most of them were from Iowa; less than a dozen Duroc-Jersey herds were shipped in from other states, principally from Illinois. Undoubtedly this hardy, prolific breed is fast capturing the friendship of Iowa farmers. Prof. W. J. Kennedy and H. H. Kildee were assigned the laborious task of sifting out the winners from this vast array of red hogs. They clung tenaciously to the medium type, combining big bone and a fair degree of quality and strong pasterns. It was quickly evident that hogs which walked on their heels stood no show of winning and exhibitors generally expressed their approval of this crusade against weak underpinning.

Prizes were well scattered among the different herds, but Baxter & Comer, Sells and Castle, were especially prominent in the winnings. The former firm showed the champion boar, the senior yearling Protection Colonel. Hanks and Bishop had the champion sow, the two-year-old Crimson Jewel. These made a pair hard to fault in any points.

Poland-Chinas, also numerous at Des Moines, put up a splendid show this year. There were only seven herds from outside the state, but these brought the best the breed afforded and captured both purple ribbons. The show of this breed was a splendid one, particularly so because of the large number of animals which combined size with quality. W. Z. Swallow and J. M. Stewart tied the ribbons and sought as much scale as they could find without sacrificing quality. Wellington & Spring, John Francis & Son, and J. E. Meharry were the prominent first prize winners. Francis won the boar championship with the wide, smooth, short-legged, medium type two-year-old Meddler Keepon. Meharry had the champion sow, also of the medium type.

Berkshires were shown from eight Iowa herds and one from Minnesota. The visitor brought the goods with him and took back a lion's share of the ribbons and money, but missed the championships. J. C. Miller had the champion boar in the junior yearling Crown Premier; C. A. Evans the champion sow in the two-year-old Stumpy Lady Lee. N. H. Gentry officiated as judge.

Chester Whites from over a dozen Iowa herds and half as many from outside states made a show of good quality. H. L. Orcutt, Monroe, Iowa, judged them.

THE SHEEP SECTION.

The sheep entries this year were of very attractive quality, embracing many of the best animals brought over from England this summer and some that were considered by good judges on that side of the Atlantic to be as good as could be furnished in the home of the breeds. Several new flocks were represented with an extraordinarily good quality of foundation stock that snatched some of the laurels from the older exhibitors. Some of the sheep were comfortably housed in the northeast corner of the swine building; the others were distributed through the old sheep sheds. As usual most of the prizes went to imported sheep except in the classes for home-bred animals alone, yet the interest taken by home breeders in the contest among themselves gives hope that the excuse for providing these closed classes will gradually be removed.

Shropshires as usual made up the bulk of the sheep entries at Des Moines. The McKerrow, Chandler, Elmendorf and Renk flocks did the winning in the open classes. Some splendid sheep were imported for these flocks the past summer so that they are starting in the fall campaign with good exhibits and hot competition. Elmendorf Stock Farm landed the ram championship with a rare good typey compact ram. With its first prize yearling this flock has a well nigh invincible pair of rams. These were considered by some judges to be the best rams to leave England this year. Chandler Bros. were strong on the ewe end of the show with both first prize aged ewe and lamb. The latter is wonderfully forward and neat, covered in every part and carrying a thick fleece. She was champion. So strong was the ewe show that a beautiful one from the Elmendorf flock, considered by some judges in England to be the best to leave its shores this season, was beaten in its class here. This Elmendorf flock has been newly established and the showing made against the veterans of the ring was very creditable.

Home-bred Shropshires did not compare favorably with the imported flocks, but much improvement has been made by them in the past two years. Steady gains are following experience and attention to the details of flock management which are apt to escape American flock owners. Some excellent home-bred sheep were exhibited that looked good by themselves and it is only a question of time till open competition will be courted by home breeders. The get of ram entries were both Iowa bred. The lambs were of good type and well shown although lacking the size so greatly coveted but not yet attained by home breeders.

Oxfords furnished a contest mainly between the McKerrow and Hechtner flocks, with the winnings pretty well distributed, although in the final decisions both championships went to the Wisconsin flock. Hechtner won the flock prize. John Graham & Sons of Iowa showed a pen of home-bred lambs without competition. The champion ram and ewe adhered closely to the compact, useful type of Oxford growing in esteem among men who prefer a moderately large sheep.

Hampshires were shown in small numbers but of the best quality. The two Wisconsin flocks fought for the awards with a fairly even division of the honors. Harding headed both the aged classes and the yearling ewes, taking the female championship on the sweet, compact, close-fleeced, short-necked yearling. Renk Bros. won with their yearling ram and both their lambs. Their yearling which won the championship is low-set, wide, thick-fleeced and masculine, of the type that has made the breed popular with many flock owners.

Southdowns made up in quality what they lacked in numbers. The two competing flocks were of a little different stamp. McKerrow's partake more of the rugged, growthy type with the scale that has always found favor in American showyards. Hite's sheep, newly imported from the most fashionable flocks in England, are of the refined, very compact, small type now gaining popularity among English Southdown breeders. The aged ram is a wonderful package of prime mutton, winning recognition from the judge in the face of his natural bias for a larger type.

Dorsets from three flocks divided the honors, most of them going to Brown and Nash. Nash Bros. are familiar show winners with their famous flock, well bred, well trimmed and well shown. The Brown flock is a new one just established with an importation this summer. That its type is right and the individuality good is shown by its leading position in the aged and lamb classes and flock, although the Nash yearlings proved invincible candidates for the championhsips.

Two flocks of the handy, sturdy Cheviots were brought out in good form. Of the two the Parnell sheep were in better bloom and showed to better advantage, besides having in some cases a more acceptable type.

Cotswolds were represented by two of the best flocks in America. Lewis Bros. had first place with their very growthy, strong-backed lamb, but the Harding entries won all the other firsts and the championships. The champion ram is an extremely good-fleeced two-year-old and a solid block of mutton. The champion ewe is a sweet-fronted, compact yearling. The excellent character of both these flocks was a distinct asset to the sheep show.

Merinos and Rambouillets made an interesting show, for the flocks present included some very good individuals of these wool-producing breeds. There were two flocks of each breed.

The mutton breeds were all judged by W. H. Beattie, Wilton Grove, Ont., and barring the usual complaints of disappointed showmen his decisions were well received by the ringside talent. W. S. Dixon, Brandon, Wis., placed the fine wool entries.

THE HORSE SECTION.

The horse section this year was one of the strongest of the fair, exceeding former exhibitions at Des Moines numerically and surpassing all former years in the general high quality of the entries. Importers had the best horses to be found abroad this summer and home breeders demonstrated their ability to produce horses that could hold their own in open competition. True, the proportion of superlative American-bred draft horses was not large, but enough were forward to furnish timid breeders convincing proof that America has unexcelled possibilities for draft horse breeding. Iowa breeders exhibited some excellent young things and brought out a number of winning stallions which have been used mostly on grade mares because no other kind was at hand. That these stallions are working a vast improvement in the horse population about them was evident in the splendid grade draft farmers' teams that filled the arena when their call was given.

Classes for foals were very poorly filled. There is a splendid opportunity in this line for small breeders to win money and honors by bringing out their foals. There is no better advertising for a breeder than a good group of foals. Such exhibits are needed to establish a foundation for home-bred horses in the older classes. Aside from this deficiency, the horse department set a high mark for succeeding shows to aim at.

Although many imported horses were sick from the oppressive heat when they were shipped to Des Moines before fully recovering from the effects of their ocean journey, they made a remarkable exhibition. Such uniformly good quality as prevailed portends a long step forward in horse breeding.

PERCHERONS.

Percherons are the favorite in Iowa. Viewed from every angle, their showing evidenced the fact. Percherons filled the stable, the catalogue, the ring. Fully one-third of all the horses on the grounds were Percherons and the quality was uniformly good. In few cases was there an outstanding winner. Prof. W. J. Kennedy performed the difficult task of making the awards. He adhered closely to the strong-boned, thick, massive type, and necessarily, from the large classes that came before him, many splendid individuals were sent to the barns because of slight deficiency in either underpinning or middle. A better class of aged stallions was never brought into a state fair ring than that from which the sensational Carnot was finally sifted to the top. Carnot was the pride of France, first prize winner at the Paris show this summer and declared by some of the oldest men in the draft horse business to be the best Percheron stallion ever brought to America. Feet, bone and action Carnot has in plenty, combined with a silky quality, compactly molded middle and ends, and a grand, toppy stallion's front that stamps him as a rare horse. Next to him stood McMillan's Cartilage, also a black, low-set, solid, heavy, serviceable horse, especially well ribbed and powerful in his hindquarters. The other winners, one from the Burgess stables and two more from the Crouch barn, followed closely after this pattern.

The three-year-olds gave a less uniform lot of winners. Gafrannus is a big, wide black, standing on short legs. He was shown very fat, but he lacks toppiness and that bold carriage so much admired in a sire. His action is not brilliant. Gabon, another black, stood next and made up in muscle, vigor and bone what he lacked in bulk compared with winner. Grateau, next in line, was a trifle undersized in this company, but was chock full of quality.

When twenty-nine two-year-olds filled the arena a grilling selection was begun in making up the short leet. Eleven came from the Burgess stable, and it is safe to say an exhibit of this size and quality never before entered a ring from one importer's barns. So good were they that seven of them were among the eight included in the final line-up, with the outside horse in fourth place. The winner of this group, Halicte, is a dark gray of great bone and substance. Ismael, the winning yearling, is destined to be heard from another year. His bone and muscling are remarkable and carried him to the front in spite of an attack of distemper which left him dispirited and gaunt. The gray Duke had less bone, but was a thick-bodied colt with splendid quality.

The aged mares included the massive old roan campaigner Castille, which was first at the International the last two years and first at Des Moines last year. She was put at the head of the class, followed by her stable mate, Strawberry, also a roan and of much the same pattern. The gray Flinch is every inch a mare, roomy, wide, and on legs of the best quality. Lucy is a trifle shorter, but of much the same classy stamp. The two make a remarkable pair, although they lack the extreme scale of the roans. Three-year-olds furnished some notable fillies. The black Gauloise is a very compact one, with deep chest, big bone and great muscle. Annette is sweeter, more feminine, longer and roomier in the middle, and has remarkably well sprung ribs and heavy quarters. Both have splendid quality. The decision was a question of type, and many preferred Annette.

The keenest interest centered on the stallion championship. Carnot's magnificent type and bold, free carriage captured the hearts of the ringside by storm. While thin in flesh, he made a splendid show. Gafrannus was fatter and looked a massive horse, but in stallion character and action he lacked perceptibly compared to the sensational Carnot, so there was general disappointment when he was given premier honors.

BELGIANS.

A distinctly high class show was made by the Belgians, which came before R. B. Ogilvie, Chicago, for their awards. The aged and three-year-old stallion classes each brought an even dozen into the ring, and the judge pronounced the aged class one of the very best ever assembled. Richelieu, a beautifully dappled brown, with white hind feet, finished at the head of the first class. He is a great-chested, bold-going horse, with a high crest and carriage, and he stands on the best of big, smooth bone and good feet. He is a remarkable horse, combining substance with style and quality to a very unusual degree, and well did he deserve the championship honors he later received. Charley Boy, the roan standing next in the class, has big, smooth bone and great feet, and a top and ends, making him a hard horse to beat, but he is scarcely as compact a horse nor so strong of chest as the brown. Martin du Hazoir came out in fine form again this year after a hard season's service. Last year he was second, this year third. He preserves his quality wonderfully well, and that, combined with his great substance and ends, makes him a formidable competitor. He had been bare-footed all summer, so his feet are short now, placing him at some disadvantage. A wonderfully blocky, heavy horse for his inches is Coquet, which stood in fourth place. He is barely four years old, has served 130 mares this season and carried his weight at 2,100 pounds right through the work—some recommendation, indeed, for his feeding ability.

The three-year-olds gave ample room for rigid selection and yielded a top quality commensurate with the pains taken by the judge. Aged mares were represented by eight candidates, led by big, square-ended Margarine. The final alignment gave a quartet of rare excellence. The three-year-old fillies furnished the champion, Diane die Kat. Her success proves her the more remarkable since she was handicapped by raising a colt the past spring. Foals were represented with only one stallion and two fillies. These were splendid little fellows, but deserved some competition to make them tussel for their laurels.

SHIRES.

Shires of good quality were exhibited by a number of small Iowa breeders. Their entries added to those of the big importing firms made an attractive show. The aged and three-year-old stallion classes especially were well-filled and competition close. R. B. Ogilvie passed judgment on this breed and demanded bone and quality in the winners. Fortunately for the competing horses, their quality was generally good, but every time he sent a draft of them back to the barn those that remained to fight for honors presented a decidedly better average quality of legs and silkier feather than impressed one when all were together. Shires cannot win in American show yards on heavy feather alone. Coarse, wiry hair on the legs is especially objectionable. Some of the winners had scarcely enough feather to satisfy any stickler for this feature of breed type, but they had all they needed for usefulness.

There were none of the extremely course-legged Shires shown, as progressive importers have stopped bringing them over, but every step in advance warrants the making of another, so it is but natural the judge should tighten the screws on those falling below the average. Truman's Pioneer Stud Farm, as usual, centered a large part of its attention on these classes and took all the important prizes on stallions, and won both championships. The aged stallion, Dan Patch, is one of the powerful, masculine kind, a fit leader for good company. Cockerington Tug of War is a good quality colt, moving well. Littleworth Marmion is a big boned, smooth-skinned gray two-year old, beating the bay Wrydeland's Chief, a muscular, rugged one with coarser feather and less pleasing quality. The sorrel yearling, William's Moulton Temple, is a massive, big-boned, powerful home-bred colt, thick through the body and stifle; yet his legs could be improved by a trifle longer pasterns and a finer quality of feather. The home-bred Teddy Loyal, standing next, showed a little thin, but is a likely looking youngster.

Five aged mares came before the judge and made a very creditable appearance, compensating in quality what they lacked in numbers, although Wrydeland's Sunshine is no such sensational show mare as last year's winner of the same family. Among the two-year-old fillies the first and second prizes in the open class both went to home-bred ones from Iowa breeding farms, a gratifying indication of the possibilities for breeding good horses in the corn belt.

CLYDESDALES.

The Clydesdale show was not up to the standard of some other years, especially in the younger classes. Baron Clifton easily headed the ring of aged stallions and tallied very closely with the judge's ideal. Robert Miller, Stouffville, Ont., who made the awards, adhered closely to the approved Scotch pattern. He insisted on good feet and pasterns, silky quality and free, straight action. Some very useful animals lost out because they were deficient in these breed characteristics. Owing to restricted numbers from which to chose in making awards, the judge was compelled in some few cases to give prizes to horses that lacked a trifle in substance, more particularly in yearlings and two-year-olds. It must not be forgotten that Clydesdales develop less rapidly than colts of other draft breeds, so that while the young classes showed up rather undersized, the aged stallions and mares made a very gratifying display. The mares were an especially strong, full-bodied, heavy-quartered, big-boned lot, with quality to please the judge. Some beautiful foals were also shown, but, as with the other breeds, they were not out in anything like the numbers needed to arouse interest and rivalry among breeders.

HACKNEYS.

Hackneys were not numerous, but were good—one of the best displays ever seen at a state fair. Alex. Galbraith, DeKalb, Ill., judged them. In aged stallions the grand moving chestnut Kingsland Raincliff won honors for his owners. He is a smooth full-made, fine-type fellow. Less graceful, perhaps, and a trifle unbalanced in action is the bay Tholla Fashion. Neptune, a chestnut, is a flash mover, with style and go, but was set down to third place because of some lack in body substance. The three-year-old Heacham Noble Shoe is a good moving light sorrel, excelling principally in form and quality. Terrington Warrior can out-act him, but he has a heavy head. Tollington was put down to third place because, while he moved well and is fat, he is a trifle small for the company he was in.

The pair of two-year-olds which won for Messrs. Crouch rank clearly among the choicest young horses of the breed which have been brought over. They were at the front in English showyards. The first prize colt is flashier in action, but his mate has a bit more substance and would be preferred by some breeders for stud duty.

FRENCH AND GERMAN COACH.

J. Crouch & Son had everything their own way in the showing of coach horses, but they presented an imposing lot of German Coach stallions. Mohikaner, the five-year-old bay stallion, goes steadily and high at the end of the line, doing all that is asked of him. He is rather a large, heavy individual and some at the ringside preferred the lighter-built, more active type of some of his mates. W. A. Dobson was judge.

SADDLE HORSES.

Saddle horses were well represented with entries of such a high order that every prize was hotly contested. R. E. Jones, Webster City, Ia., tied the ribbons. The famous old time winner, Jack O'Diamond, clearly outclassed the open field in performance and no one was surprised to see him win the championship. In aged stallions Mack Donald and Rex Chief A were set over Alexander Jester, but Jester was not well ridden. He is an almost perfect horse in form and quality. Among the aged mares the decision called for nice discrimination. The gray Lady Vanity is a perfectly mannered, stylish-going mare, sweet-headed but rather lacking in substance and drooping in the croup. Her performance won over her more beautiful and stronger made competitors. Later her perfect training won for her in a walk, trot and canter class, which she negotiated without a single break into the habitual rack. Jack O'Diamond was still invincible in the combination class, but Lady Vanity followed next by reason of her perfect performance in the shafts.

ROADSTERS.

In the class for single roadsters Thomas Bass won first with a beautiful, compact, strong-going chestnut gelding, Jack of Hearts, clearly outclassing everything else in style and appearance, although possibly a bit less speedy than some of the others. He is one of the compact, enduring kind. Chas. C. Judy was second and J. R. Peak & Son were third with a mare Florence. O. J. Mooers was fourth with the speedy Duke-o'-Bells. When pairs were called, the judge, W. A. Dobson, was given a good exhibition, although one likely-looking pair, Jack of Hearts and his mate, were barred on a technicality. The pairs each drove well together, but some were not closely matched. In the final line-up J. R. Peak and Sons got first and fourth prizes; Chas. C. Judy, second, and O. J. Mooers, third. Champion stallion, mare or gelding—Peak on Tommy Doyle.

SHETLAND PONIES.

The Shetland Pony classes were well filled, the number of entries being unusually large. While some of the largest exhibits were from points outside the state, yet the most of the animals shown were small entries from many farms within the state. Some classes were unusually large as for instance the aged mare class which brought thirty-four into the ring. It is generally admitted that the pony will never have a competitor in the auto, as the latter is the exclusive property of the larger folks and the pony is likewise the exclusive property and companion of the little folks. Consequently the interest in this section is constantly increasing and gathering strength.

To occupy the field fully, however, there is much yet to be said to induce the breeders to pay more attention to the action. The old fashioned Shetland Pony, coarse, stout and slow-moving, must give way to the more modern type especially in the matter of action. The straight-knee action in front with the spreading cow-hocked action behind will not do. The Shetlands now have the field to themselves and if some pains are taken to improve them so that the action is gayer with more knee-folding and more lifting of the hock, no other breed of ponies can occupy their field; but if they are allowed to remain as the old-fashioned type would have them there is the possibility of some other variety surpassing them. The most of the prize winners, in addition to being smooth and symmetrical had good action, as the judge, Prof. John A. Craig, Stillwater, Okla., paid careful attention to this point as well as type. Breeders should be quicker to recognize the demands of the times and bring about the improvement needed as rapidly as possible. The exhibit as a whole was one exceedingly gratifying to pony lovers.

DRAFT GELDINGS AND MARES.

Much interest has been aroused in the classes for draft geldings and mares. The quality of horses entered was the best. Burgess won first on aged mare or gelding with the grand, big, upstanding dark gray four-year-old Trochu, a big-boned, good-footed, bold-going gelding that is very prime. Crouch won second and fourth with the chestnut swing pair of the six-horse team and third with the off leader. Swift's entries were passed by the judge, R. B. Ogilvie, as being too stale in going and too small of bone for their weight. The success of the Belgian cross on farm-mares was demonstrated in the two-year-old class when Chas. Irvine won three places out of four with his grade—compact, low-set, big-boned, lusty colts. He also won first on yearlings with one of the same kind.

In four and six-horse teams Swift & Co. won over Crouch & Son. Both outfits are splendid. The Swift horses are larger, better conditioned, and heavier, match perfectly in type and color and are better trained. From all parts of the country the different horses came. It will take a rare team to beat them, as such uniformity in type and color has never before been seen in a six-horse team of draft horses.

In draft teams in harness the weight and finish of the Swift pairs clearly entitled them to recognition and they were awarded first and third places, with the two best Crouch geldings, a chestnut and a gray, second. The best Swift pair has an overwhelming advantage in weight, and they are perfectly matched.

Five pairs, hitched to farm wagons, entered the ring at the call for farmers' teams. All reflected the growing sentiment of leading farmers toward heavy horses for farm work. These pairs were all draft bred, weighing around 1,500 to 1,800 pounds. All of them came from a locality where mare and colt shows are a prominent part of the annual winter farmers' institute. These shows have grown in interest the last few years until now over 50 mares are sometimes entered in one class. The region has attracted good stallions and become famous for its good horses. Buyers are drawn to it and find marketable horses of rare quality. Thus has a community interest and a fame grown from an original mare and colt show. The conditions came pleasantly to light when these five pairs were seen to have such a monopoly of draft type and quality in the farm team exhibition.

MULES.

Three exhibitors brought out mules—H. M. Hall of Missouri; C. C. Judy, Tallula, Ill., and T. J. Lee of Iowa. W. A. Dobson placed the awards on them in a careful, painstaking manner, with general satisfaction. He chose the active, big-boned, smooth mules known to work fast and wear well. The quality was so good that in some cases it was hard to choose.

BOYS' JUDGING CONTEST.

The boys' judging contest was held Saturday. Each of the 32 contestants, judged several classes of corn and live stock, reported his placing and explained his reasons for the decisions. Prof. E. N. Wentworth had charge of the stock judging and Prof. B. W. Crossley the corn.

TWENTIETH CENTURY FARMER, OMAHA, NEB.

The Iowa State Fair for 1909 is another demonstration of the forward movement to greater and better things in state fair enterprises and achievements. It illustrated more positively than at any former exhibition of this great agricultural exposition that agriculture and agricultural tendencies are the bases upon which the business and educational interests of this great commonwealth are founded. It pointed out with unmistakable evidence, in every feature of exhibition interest, that the spirit of the times demands improvement and that nothing short of progress will satisfy the ambition of its people. This is a great fair and its greatness is measured by the loyalty and support of its people as exhibitors and patrons.

Truthfully it has been said that Iowa's state fair is building for the future. The wisdom of its state board in planning its grounds, its department buildings and exhibition accommodations to satisfy the growing demands of a great agricultural community, such as its live stock and soil resources seem capable of commanding has already proven that they are not overdrawn or extravagant. Its beautiful grounds of 240 acres, with a natural landscape fitness and grandeur of hill, forest and valley, which give it that easy, comfortable influence in surroundings that make it pleasant and homelike to the visitor, is a quality that will always be admired in the location and reflect credit upon the judgment and wisdom of its founders.

FEATURES OF IMPROVEMENTS.

Among the splendid features of improvement and those worthy of commendation to public enterprise are the live stock judging pavilion, the hog barn, the agricultural building, the new steel grandstand and the administration building. These are monuments of business intelligence that every citizen of Iowa can take pride in pointing out.

The large live stock judging pavilion is not only a convenience, but at this period of the live stock development and exhibition interests of this fair, it is one of the necessities, an improvement that could not, in

PARTICIPANTS IN THE BOYS' JUDGING CONTEST fact, be dispensed with at this time. Here thousands of interested farmers and stock men and their wives, sons and daughters gather to witness the judging of the horses and cattle, of all breeds. It is here the state fair holds its judging school, its live stock institute, its course of instruction, so to speak, in the science of stock judging, in the art of selecting the best.

The hog barn is the name given to the immense brick building where the hogs are housed and provided with hotel accommodations during the fair. This building is so large, so complete in its structure, architecture, sanitation, etc., almost as large as four city blocks, that it really seems as though it should be dignified with some modern title, some designation more in accord with its greatness, grandeur and fitness for congregating large numbers of swine to one general hostelry, one common place of exposition and entertainment. Iowa is the great hog state of the union. Its swine population is so vastly in excess of any other state that there is practically no comparison, almost double that of the state ranking second in number of swine produced. This swine building is the largest structure of its kind in the world. Its capacity can provide eating and sleeping accommodations for 4,000 head of swine and give the mature old sires and dams each a separate bed. It is great in extent and fitness as a place for congregating the show hogs of the pure bred swine of the country.

NEW STEEL GRANDSTAND.

The grandstand or amphitheater at the race track is a newly acquired structure on the fair grounds and is one of the most complete improvements of this character to be found on any state fair grounds in the United States. Besides being permanent, lasting and entirely free from any liabilities of accident or injury to fair patrons, it is a revenue producer that has no equal on the grounds.

The administration building is the place where the business of the fair is transacted; where the offices are located and the officers who are active in the management of affairs may be found. It is also the place above all others on the fair grounds where the people of Iowa feel free to go and rest, enjoy a big rocking chair on the wide veranda or porch that extends on all sides around this large, magnificently planned building. Hundreds of tired people thus enjoy a few moments' rest in the shade and go again on their errand of sight-seeing. Within this building, on the main floor, is a large court or lobby that is finished with settees and easy chairs and will accomodate scores of visitors.

CENTERS OF ATTRACTION.

The live stock divisions were, as usual, centers of attraction. Great crowds thronged the judging pavilion while the animals were being passed upon in the awarding of premiums.

The cattle divisions were especially strong. This was a matter of comment by specialists on almost every class. "The best show the state has ever made," was a common remark around the show ring.

The Herefords were judged by Thomas Mortimer of Nebraska, a prominent breeder and many years exhibitor of Hereford cattle. These classes were so closely mated up in excellence that it taxed the perception of the judge, in many instances, to know just where he wanted to let the decision drop. It is but just, however, to this expert to say that he placed his awards on the cattle, not the owner.

The Shorthorns were just as meritorious in quality and just as difficult a class to handle in the matter of decision of the choice animal to be selected as the ribbon bearer. Many of the best herds of this breed in the United States were present contesting for their prizes. One of the complimentary expressions frequently heard was:

"They are all good. The breeders are learning to keep the tail ends of their herds at home," etc.

The general opinion expressed was that there is being more attention paid to fitting, and a less number of cattle coming into the ring not in good sound condition than formerly. In short, the disposition of the ring side critic is to compliment the exhibitors in the decided step taken to raise the standard of condition and quality for exhibition. What has been said of the two breeds named might with equal propriety be said of those not named.

HORSE OF THE PRESENT.

In the horse division there was a grand display of the big draft classes. The draft horse is the horse of the present period. He is not only the horse of present great demand, but the horse of future requirement, and no matter what the inventive genius of man devises or plans as a substitute for horse power, there will still be a place left for the big draft horse, and the horse of all work on the farm. The action trained into this big class of horses is never so pronounced or so impressively brought to one's attention as when on exhibition in the show ring. Each year seems to make more emphatic the development of activity, strength and endurance in the draft horse.

The evidence of increased interest in the American bred draft horse is apparent in the increased number of draft mares shown at the fairs. The quality is also a factor favoring the home grown draft horse. The time is not far off when the American bred draft horse will be sought after with as much favor and demand as the imported horse of the present day is receiving in America. More attention to the quality of the horse, in power of endurance, will be given and less to the forcing methods of acquiring early maturity in the animal. All classes of horses were well represented, and the usual big Iowa exhibit was recorded.

STRONG SWINE SHOW.

The show of swine embraced about all the breeds produced having any commercial value as pork makers. The Durocs were as usual quite prominent and elicited much comment from hog fanciers as being a remarkably strong show. The aged boar class was referred to by many as being the best ever witnessed at this fair. The Duroc breeders all wore a smile that seemed to indicate that they were perfectly satisfied with the red hog. The leading Duroc herds of the country were represented by specimens of their best work in breeding skill and fitting qualities.

The Poland-Chinas were in evidence in large numbers, but owing to a divergence in type that has developed into what is termed the small-boned and the large-boned Poland-Chinas, there is not the exhibition interest in this breed that formerly prevailed. It seems that this big type and small type idea has grown so pronounced with breeders that there is reason for a separate classification in order to satisfy the exhibition demands. The judge, if he be of the big type idea, could not consistently make the small type hog fill his ideal when judging, consequnetly would be disqualified for this duty, and vice versa, should the judge be of the small type persuasion.

It would seem a useless task to try to convert one of these factions or class of breeders over to the other. They could not be persuaded to take a medium position even. The quickest way out would be for the fair associations to satisfy these extremes by classification and fix a standard of weights to get into the big types similar to the plan in use by the poultry breeders of the big breeds. This would cut the strings and let the big hog breeder go uninterruptedly forward, making his ideal just as big as his fancy seemed to justify in this particular feature. The hog display was estimated to be almost one-third less in numbers this year in comparison with former years, but fully up in quality, many asserting that they never saw so few hogs at this fair that could not be classed as good, both in quality and condition.

SHEEP INDUSTRY GROWING.

The sheep industry in Iowa is steadily advancing and upon a basis of better animals and more flocks. The farm flock is getting to be more common in Iowa and these are generally being started upon a pure-bred foundation. Seven years ago, when the present superintendent, H. L. Pike, first took charge of this department, there were less than 200 sheep exhibited by ten exhibitors. This division of the fair has steadily increased until there are now three times this number of sheep on exhibition by three times the number of owners. The Iowa State fair has developed this department into one of the best sheep shows in the country. Patrons come now from eight different states to get the advertising advantage that this fair affords.

The poultry department has taken on new life and this year shows a greatly increased display of fowls and of better quality. The state fair management has added to the exhibition facilities of this feature of their fair a new equipment of cooping, consisting of 800 of the new wire coops at a cost of $1,800. This is said to have revived a disposition to show among many fanciers who were not pleased with the old plan of cooping in all sorts of boxes and styles of coops. The department is so wonderfully improved by this new furniture that the general features of the show are scarcely recognizable, even by the old every-year exhibitor who has been coming since the fair was first organized. It pays to dress up occasionally, even if it is no more than getting new chicken coops.

AGRICULTURE NOT STRONG.

The agricultural, horticultural and floral departments are housed in the agricultural buildings and are a part only of the various displays that are used to fill up the exhibition space of this large building. The agricultural display of the great state of Iowa, as presented at the Iowa State fair is a surprise and disappointment to visitors generally. The county collective exhibits are participated in by eight or nine counties and are put up on the economical plan in space covered, variety and quality displayed that is entirely out of proportion with a great agricultural state like Iowa. If the importance of agriculture in Iowa was to be measured by its display at the state fair it would be woefully and fearfully misrepresented. The quality of its products exhibited, the taste of the exhibitor in putting up these displays are without fault. It is the lack of premium incentive to induce the farmer and gardener to bring the stuff to the fair that gives this department its stinted and out of proportion effect upon the visitor. A few thousand dollars injected into the farm products department of the premium list would result in crowding the other departments and foreign exhibits of this building which is now designated as agricultural hall and Iowa's State fair would take a position where it belongs in the front ranks in the exposition of farm products.

HORTICULTURAL EXHIBIT.

The horticultural exhibit was good, as is usually the case at this fair. The display of apples indicated that the Iowa orchardist had been looking after the codling moth, that the sprayer had been in use in the orchard and that orchard care has been observed in at least some of the orchards of Iowa.

Among the very fine displays we shall mention only a few, Garret Bros. of Polk county had five tables, 4x20 feet, exhibition space, with a full display of all kinds of fruits. The quality was good.

W. W. Guiou, with an excellent display, was competing for finest artistic design made from fruits.

B. A. Mathews of Knoxville, Ia., had a remarkable display of pears. He had seventy-two varieties on exhibition from an orchard that contained 175 varieties. Mr. Mathews is called by some a pear crank, but the title of pear expert might be more properly applied to this gentleman, and with very good grace, since he grows pears by the carload. His pear orchard contains 3,100 trees. His preferred kinds and those that he recommends for the common orchard are Keiffer, Warner, Durand Clairgan, Flemish Beauty, Seckel and Vermont Beauty.

J. W. Murphy, Mills county, showed 188 varieties of fruits, ninety-seven of these being apples and twelve crabs. His table space was 3,200 square feet, an extra fine show, the result of spraying regularly each year.

The bee and honey exhibit was good considering the poor season just passing for bees to gather supplies. The dairy products exhibit was not so full as has been shown in former years; the creamery supply department and separator exhibit was not so active in pushing their interests nor so strongly represented.

EXHIBITION OF ALFALFA.

The exhibition of alfalfa by the State Department of Agriculture was made a special feature and fairly demonstrated that Iowa can raise alfalfa just as good for all feed purposes as any other state in the central west. The samples of alfalfa, both in sheaf and baled hay, were fine, nicely cured, excellent in color and in all respects quite perfect as a hay product. Four crops in 1908 were shown, where seven tons and 400 pounds per acre were harvested. The seed crop in almost all cases proved a failure. It was agreed that it did not pay to try to get a seed crop. The corn exhibit of 1908, ear corn, was highly creditable.

The textile, ceramic, fine art, mercantile, domestic science and educational exhibits were all nicely observed and tastefully displayed. The educational exhibit was under the supervision of Prof. A. V. Storm and was Iowa's first effort in this line of display.

OLD SOLDIERS' REUNION.

The old soldiers' reunion on the State Fair grounds is made one of the strong features at the Iowa State fair. It is participated in by old soldiers from all over the country. Grand army officers and representatives were present from many states. The enthusiasm and demonstration of patriotic spirit that is aroused in these meetings, among those old gray-haired veterans of the civil war can never be equaled by any other set of American citizens. The attendance of General Fred Grant at this meeting served to add a life and spirit to the occasion that seemed almost a living over again the days of the peerless General Grant at the head of the union army.

The Iowa State fair of 1909 can be summed up in all its details and departments as the greatest exhibition this association has ever conducted. It fairly sets forth the onward movement in state fair improvement that is abroad in the land. It points to the higher standard in methods of state fair lines that is now being encouraged and observed among all up-to-date fair associations.

SHORTHORNS.

It seems that every year the class of Shorthorns that are exhibited at the Iowa State fair are a little better class all through than the preceding year. We are convinced that the breeders are all coming to realize that it is no use to exhibit stock unless they are in good condition. Very few cattle were shown that were not a credit to the exhibitor.

ABERDEEN ANGUS.

The breeders of Aberdeen-Angus cattle always make a remarkably strong show at the Iowa state fair. This breed is steadily growing in numbers and in popularity. Angus cattle have made a place for themselves and in every place they have made good. It is a pleasure to see the splendid herds that come up to the fair. In point of quality, in uniformity of type, and, generally speaking, in proper fitting for the show ring, they are not surpassed by any others. This year was no exception, and those who have followed the fairs year after year had no hesitation in saying that the Angus show was as good as any year in the past. In some classes it was better. As usual a few of the old Iowa herds carried off the bulk of the ribbons and the prize money. The first prize aged bull was Glenfoil Thickset 2d and the second prize went to Deceiver. N. D. Korns of Hartwick, Ia., won the fourth on Parole 2d. Otto E. Briney, of Central City, Ia., won third on Pride of Longgrove on bull 2 years old. In the class for senior yearling bulls Louis Millaud won third on Ever Black. In the class for junior yearling bull J. W. McClung & Son of Indianola, Neb., won third on St. Marcus of Sundance, and this same herd won first on senior bull calf and fifth on junior bull calf. These breeders made a good showing in the classes for cows and heifers, and it is a pleasure to note the fact that a Nebraska herd can send out show cattle that can win in the face of such hard competition. Pride McHenry was the champion cow.

HEREFORDS.

It seemed to be the general expression that the Hereford show this year was the best ever seen on the Iowa state fair grounds. The exhibit was large and the class of cattle was of the very best.

GALLOWAYS.

The Galloway show was up to the standard and the herds made a very good showing.

RED POLES.

The showing of Red Polled cattle was one of the attractive features of the show. Several of the best herds were well represented and the cattle were in nice condition. There was quite a difference of type, running from those of the strictly milking kind to the low down, thick beefy ones.

POLLED DURHAMS.

The exhibit of Polled Durhams was real good, but not quite as good as we have seen at this show.

HOLSTEINS.

The Holsteins are gaining in favor in the western country very fast and the breeders from several states were in attendance with their herds to contest for the honors. Several animals of unusual quality were shown.

GUERNSEYS.

One of the very best shows that the breed ever made in the west was their exhibit at Des Moines this year. Several splendid herds were well represented and there is no doubt but they are fast coming into favor as a dairy cattle for the Missouri Valley.

SWINE DEPARTMENT.

DUROC JERSEYS.

The Duroc show at the Iowa State fair this year, as a whole, was as good as we ever saw, and in many of the classes we do not think we ever saw closer competition and more meritorious animals. The judging was done by Prof. W. J. Kennedy, with referee, Prof. H. H. Kildee, Ames, Ia., and from our own observation and ringside comments we think the judging was as satisfactory as we ever saw and much better than most years. The show showed improvement in that there was not so many common-class animals shown. Very seldom was one driven into the ring that was not a fairly good specimen of the breed. We regret very much to report that our brother breeders from east of the Mississippi river were successful in winning every first on boars down to pig under 6 months. In the aged class Golden Model 2d, owned by Waltemeyer Bros., was one of the best boars we ever saw exhibited of the breed and in pink condition, but the judges gave first to B. & C.'s Colonel, who is a great hog, being close to the ground and very thick. Do not think, western breeders, that you have no good hogs, but you must give more attention to the fitting of your herds if you intend to win against the breeders of the east.

BERKSHIRES.

There was a splendid show of Berkshires at the fair. A number of well known breeders from several states had entries and without exception the quality was very high. This much may be said for the Berkshire men; they do not show as many head of hogs as the Poland-China breeders or the breeders of Durocs, but they show animals of more uniform quality, and fewer tail-enders.

TAMWORTHS.

There was a good show of Tamworth hogs at the fair this year, said by many good judges to be the best ever held in the state of Iowa. Three or four well known breeders took nearly all the premiums.

HAMPSHIRES.

There was a good exhibit of Hampshire hogs, although this breed is not very well known in the west. It bids fair, however, to increase in popularity and shows like that made at the Iowa state fair will help to make many friends for the breed.

THE HOMESTEAD.

DES MOINES, IOWA.

Fifty-five years ago Iowa held its first state fair. History records that, although small, it was interesting and the young state made a creditable showing. It was the psychological moment, for the eyes of the east were beginning to turn toward the Promised Land just beyond the Mississippi River and the famous advice, "Go west," was quickening the ideas and crystallizing the ideals of thousands of eastern folks who realized that a vast empire of possibilities was being opened up. This year Iowa held its fifty-fifth annual state fair and the possibilities of that vast empire were last week visually realized as never before. Fields which had once been given over to the wilderness and the Indian yielded up their crop treasures, not grudgingly, but bountifully, beyond the agricultural dreams of avarice when the first state fair was held. Instead of a handful of people in attendance, there were a quarter of a million. Instead of coming to an outpost on the western frontier, they came to a bustling, thriving, prosperous city of 100,000 inhabitants, "back east" to hundreds and hundreds of grandsons and granddaughters of those visitors to the first Iowa State Fair.

Fifty-five years ago Iowa set its fair the task of exploiting the possibilities and displaying the fulfillments of the state. As the years have passed both the possibilities and the fulfillments have increased. The brain and the brawn of eastern agricultural sections have settled in Iowa and been assimilated by the spirit of progress. New ideas have been eagerly accepted and modern methods followed, until the productiveness of acres has vastly increased. So the succeeding fairs have found larger and better displays, a more contented and prosperous people, and records have gone on being broken with almost monotonous regularity. It remained for the 1909 state fair, however, to eclipse all the others and more conclusively prove beyond shadow of doubt to all the outside world that Iowa is the Promised Land of plenty. Never before was prosperity so evident on every hand; never before did so many people attend the fair and show so much interest in the exhibits; never before were the possibilities of Iowa for the future so blended with the fulfillments of Iowa for the past. For agricultural Iowa is bordering on another Promised Land of plenty this year, as it was when the first state fair was held. Real, profitable dairying is just beginning; the ordinary cow is being displaced by the pedigreed; the uncertain profits of the past are about to give way to the certain, stable profits of modern, scientific dairying. Improved machinery and the dissemination of up-to-date agronomy ideas are working together to make acres yield more bushels and tons than ever before. And so a quarter of a million people passed through the gates of the fair that they might jubilate over the past and learn for the future. Herein lies the real, true value of such expositions as Iowa has been holding for the past fifty-five years.

Weather is always an important factor in state fairs and this year it was both excellent and poor. Two days before the fair opened the dry spell which had extended over practically the entire state and had lasted uninterruptedly for more than a month gave way before a drenching, cooling rain which was worth millions of dollars to the crops. That rain undoubtedly played an important part in the success of the fair, for doubts as to the yield of numerous crops were dispelled and farmers were able to leave home for a few days, content that the autumn held promise of profit. Wednesday a chilly wave set in and overcoats and wraps quickly became necessary, while the inevitable vendors of cold drinks, ice cream cones and chilled watermelon found themselves with a supply far exceeding the demand. But while the fair officials state that hot weather is the best for bring out crowds, the fact remains that cool days are the most pleasant for getting about the grounds and seeing the sights. The evenings were a trifle too cool for comfort, especially when the fireworks display in the open air was to be witnessed. But the cool evenings crowded the pavilion where the fine stock was nightly exhibited, with vaudeville attractions thrown in for diversion. It is inevitable that it must rain some day during fair week, but fortunately this year the rainy day was deferred until Thursday, when a drizzle set in that lasted throughout the day, cutting down the atendance very materially. However, the day before had brought the aggregate up to 207,000, which was 20,000 more than had attended the 1908 fair throughout the entire week, so the inclement weather did not work as much mischief as if it had come earlier in the week.

The tendency of state fairs nowadays is toward permanent buildings which shall be suitable housing for stock and crop exhibits. Iowa is making rapid progress in the displacement of old, frame structures with brick and steel concrete buildings. The stock pavilion is a splendid structure, having a large show ring in unobstructed view of the circular galleries accommodating several thousand people. The swine quarters and stock judging pavilion are of brick—roomy and sanitary. The new administration building is an architectural adornment to the grounds and in addition to housing the officials and containing reception and dining halls, provides room, both inside and out, for rest and accomodation of visitors. This year a splendid new grandstand of steel and concrete replaced the old, frame structure which for years past was too small for the crowds and was long a veritable fire and panic trap. The new amphitheater is only two-thirds the size originally planned, the legislature having cut down the desired appropriation from $160,000 to $100,000. However, it accomodates 10,000 people and is one of the best designed grandstands on any fair grounds in the country. It is still incomplete, but near enough finished to be used to the comfort and convenience of the thousands who witnessed the races, vaudeville performances and nightly fireworks display from its comfortable seats. A new race track has been built, with every inch of it in plain view of every seat in the grandstand. Between the amphitheater and the track has been placed a wide paddock.

There is still urgent need of more permanent brick or steel concrete buildings on the grounds. The exposition hall is of great interest to the ladies, but it is difficult of access (being reached only by a hard climb up a rather abrupt and steep hill) and so crowded inside as to jumble the exhibits together without much regard to the comfort either of exhibitors or visitors. Displaying fancy dress goods and high-priced furniture in such deplorably poor surroundings is altogether wrong. Probably the next building which the management should provide is a fine new machinery hall. Farm machinery is playing a most important part in the present prosperity and the future prospects of Iowa. Ninety-five per cent of the visitors to the Iowa State Fair are interested in new, improved farm machinery and desire to inspect it thoroughly.

The 1909 fair was notable because of the many men and women of national prominence who were attracted to it. Undoubtedly the most interest was centered in General and Mrs. Frederick D. Grant, who were attentive visitors and honored guests for two days. General Grant is a son of the famous general and president, a regular "chip off the old block." He is remarkably similar to his distinguished father in personal appearance, wearing the same close-cropped beard and being but a little slighter in build. On Old Soldiers' Day the general delivered an address setting forth his experiences as a boy of twelve with his father on the famous Vicksburg campaign. After the exercises he held a reception and shook hands with thousands of veterans, whose eyes dimmed as they grasped the hand of the son of their beloved commander. Mrs. Grant was most gracious. She is a beautiful woman and entered into the spirit of fraternity and good fellowship equally with her husband. Wednesday was State Day, the occasion being made notable by the presence of Governor Carroll, Senator Cummins, Congressman Hull, Congressman Smith, Congressman Kendall, Congressman Woods and most of the leading officials. Senator Dolliver was detained at home by sickness. A reception was held and thousands of loyal Iowans embraced the opportunity to meet personally the officials at the head of their state government. During the week officials from the Nebraska and Minnesota State Fairs were present, while a delegation came down from Toronto to get pointers. All agreed that Iowa holds the best stock fair of any state in the country.

One of the most interesting and instructive buildings on the grounds was that of the Iowa State College, which made a comprehensive exhibit of many things tending to make farming easier and more profitable. A large soil map of the state attracted much interest. Exhibits were made of weeds which had grown in fields planted to clover seed which had not been thoroughly cleaned. The corn yield of fields which had been rotated every four years and fields which had been planted continuously to corn for eight or ten years was shown, with the loss resulting from the failure to rotate properly borne home by an object lesson which it will be hard to forget. The possibilities of new crops—prominent among them being alfalfa—were pointed out and instruction given by competent teachers as to the possibilities of various counties and sections, what crops would do best, etc. The model Iowa silo and power-operating plant attracted much attention. One section of the building was given over to an assembly hall where classes were conducted. The ladies were especially interested in the domestic economy work, free instruction being given in practical home cooking. The daily demonstrations were of value and it is safe to say that the tables in many Iowa homes will bear both substantial and fancy articles of diet cooked in a manner not known before, excellent as are most of the farm women of Iowa as cooks and housewives.

There were several innovations in handling the crowds, all with the object to improve the opportunity of the people to get the best results out of their visit to the fair. No where was this new policy more successful than in the stock judging rings. Heretofore the judges, clerks, newspaper representatives, exhibitors and fair officials have been allowed to wander freely among the exhibited animals in the ring and often directly between the people in the galleries and the stock. This year an aisle was roped off in the center of the ring, between the two lines of exhibited stock. The people allowed inside the ring (with the exception of the official judges) were compelled to remain in this aisle, giving the spectators in the galleries an uninterrupted view of every head of stock. The policy should be continued. The spectators are entitled to see and the favored visitors in the ring can see just as well and maintain better order.

Without doubt Iowa has never held a state fair in which greater interest was manifested in the dairy cattle exhibits. Iowa already ranks second among the dairying states of the nation, but this splendid position has been achieved through the efforts of the average farmer and the average cow. How the millions earned from dairying could be increased by securing the best dairy cattle is being borne in on thousands of farmers. For practically the first time Guernseys and Holsteins were exhibited at Des Moines in large numbers. Wisconsin breeders were prominent, sending representatives of some of the finest herds ever seen in Iowa. Iowa is just entering a new dairying era which will make its farmers richer than ever before. If the state fair had no other result than to awaken interest in scientific dairying it would have been worthy every dollar it cost.

The Midway this year did not contain an objectionable show. Some of the performances were hardly worth the price of admission, but there was nothing to corrupt the morals of the people. The time was, and not so very many years ago, when Oriental dancing girls were allowed to disport themselves with little or no censorship. Iowa has always been free from many of the most objectionable shows and of recent years every sideshow attraction is inspected by the fair officials before it is allowed to exhibit, the result being that the era of clean shows has dawned, never to darken. Immense injury can be done by suggestive postures and words and Iowa cannot afford, in the interests of so-called amusement, ever to allow a show which father and son, mother and daughter, cannot see together without the slightest blush or regret.

A most interesting experiment was tried out in the agricultural department last week under Director Curtin, it being the installation of a strictly educational farm crop exhibit. A specialty was made of alfalfa and hundreds of samples of the various cuttings had been collected from all over the state. No feature of the fair attracted more attention than this, and there is no doubt but what the inspection of those alfalfa samples will result in largely increasing the area of alfalfa in Iowa during the next few years. The data given on placard in connection with this educational exhibit were reduced to their simplest terms so that men, without effort, could carry away the fundamental principles of alfalfa growing. This same plan carried out in relation to other crops, both grain and forage, proved to be even more successful by way of interesting fair visitors than was anticipated. It is doubtful if any single feature of the fair could compare with this one in its direct educational value, and the plan now that it has proven successful could advantageously be enlarged upon in many departments.

CATTLE—BEEF BREEDS.

There are always several distinctive features about the Iowa State Fair showing of beef cattle. In the first place, Des Moines is in the very center of the great corn belt and easily reached by all breeders. Then the Iowa show is the first on the list, which arrangement further aids in having a grand opening review of all herds before they separate to go on the eastern and western circuits. Perhaps in some ways the exhibition is a little less satisfactory than after the animals have become accustomed to the show ring and have settled down to the somewhat serious business of showing. Nevertheless, the Iowa contests are history makers with all the breeds and are becoming more and more popular each year. But desirable conditions are not the only factors which make for the success of the Iowa cattle shows—Governor Packard and his able corps of assistants really deserve more credit than they are sometimes given. The way these men get acquainted with the needs of exhibitors and then set about to supply them is worthy of commendation. Just a few of the other fair managers could learn a thing or two from the Iowa boys in regard to the courtesies due the men, who with their herds, are freighting about from fair to fair cheerfully putting up with many an inconvenience and hardship.

SHORT-HORNS.

Captain T. E. Robson, of London, Ontario, has certainly been making good with the Short-horn exhibitors at Des Moines in recent years, for he was selected to pick the winners again this season. In practically every class this year he was confronted by as many or more entries than he was a year ago. He found this season's showing of young things even a stronger aggregation than that appearing before him in 1908, but the cows and bulls, taken as a lot, were scarcely up to the same standard. As might be reasonably expected, some of the most promising animals on last season's circuit have completely fallen from grace, while others, from which much less was anticipated, have come on in a most gratifying manner. In the aged bull class nearly all the prize winners were playing new parts. The most likely candidate for the blue was Harding's Sidelight, a bull sired by Royal Wonder, formerly in the Anoka herd and later in service on the Burwood Stock Farm, near Milwaukee, Wis. Sidelight has been out of the Anoka barns and pastures for some time, but George Simms has a peculiar knack in getting just such individuals into shape. Everett Hayes' bull, Snowflake, continues to be a consistent contestant. A year ago he drew second in the two-year-old class at Des Moines and at Kansas City as well. This year he crowded hard for the same position in the line, but was compelled to step down for Dunwoody's Nonpareil Marquis. King Cumberland, the grand champion at the 1908 American Royal and International, has undisputed claim to the premier position among the two-year-olds and later walked handily into the grand championship. This famed son of Cumberland's Last has made a splendid growth during the past eight months. When it came to the aged cows some more discoveries were made and in a few instances the placing did not gain the general assent of the ringside. It took the judge a long time to satisfy himself and even then he turned down Edwards' Queenston Bellona and Tietjen Village Belle 3d with great reluctance. Both were cows of good lines, but lacked the deep covering which the Elmendorf entry possessed in an unusual degree. The junior yearling heifer class contained one of the features of the show—Tietjen's Miss Marshall 2d. She is as smooth a heifer as is often seen. Her main defect seemed to be she fell away about the rump more than would be permissible to allow her to beat out Sinnissippi Rose 2d for the championship. There were many, however, who would have given the heifer the honor of the contest. All of the heifer and calf classes were crowded and the entries were generally well fitted and strictly representative. The total number of Short-horns exhibited was, perhaps, slightly over that of last year owing to the increased registration in the young stock classes.

HEREFORDS.

"It is a great show, a great show." That was what they all said about the lineup of Herefords at the Iowa State Fair. Twenty-five senior yearling Hereford calves, uniformly marked as they are, well fitted and well shown, is a sight that one cannot but enjoy. The struggle for the mastery was a hard one from the start to the finish. The old-time rivals were there making the contest a renewal of old friendly feuds in the ring. Thomas Mortimer, of Madison, Neb., one of the judges at the 1908 International, was the man to solve the puzzles presented by the white-face line. When the competition is so strong and the classes so large there will be disappointments. Someone has to lose out. Men cannot all see alike when they are looking out through different eyes. Some differed on the placing, but they were never dissatisfied with the judge. No one can give more than his own honest opinion and winning or losing, the exhibitors had faith in Mortimer. Cargill & Price, Van Natta & Sons, Makin Bros. and Harris fought for firsts with about equal success in the individual classes. The first round of the battle went to Van Natta & Son when Prime Lad 9th captured the blue ribbon in the class of aged bulls. In the class of two-year-old bulls, ringside opinion favored Bryant showing his Curtis, but this animal was turned down because of lack in his handling quality and Makin Bros.' Principal 6th given first honors. It was Harris' turn for a first in the class of senior yearling bulls when fourteen splendidly even bulls of high quality lined the arena. Harris Prince led. Cargill & Price could no longer stand the pace without a taste of victory, so the senior yearling bull class went to them on their Bonnie Brae 15th. Van Natta & Son won the aged cow competition on Margaret. The heifer two years old and under three class was hard fought, Cargill & Price getting the decision on their Princess 2d, she being slightly lower set and thicker than the close second found in Van Natta & Son's Iva. Seventeen lined up under the head of senior yearling heifers. After much shifting in the line Harris stood at the head with his Harris Princess 64th. While this heifer lacked some in size and total width to her competitors she has a wonderfully thick and smooth covering of flesh. Senior heifer calves seemed to be the most numerous of all, twenty-five getting into line. Van Natta & Son were finally given the decision on their Rosette, Cargill & Price standing second with Princess 20th. The junior heifer class brought out in Gladness shown by Makin Bros., a heifer which while not so large as her competitors, was wonderfully squarely built, carrying her width very evenly from end to end. The grand champion cow of the Hereford department was Van Natta's Margaret. While this animal was beaten last year by animals in the competition this year, she shows up now very well fitted, is at once deep, wide and low set, an all round fitting representative of the white-face type, and stands a good show of duplicating her last year's performance at the International. The grand champion bull of the Herefords was Prime Lad 9th. With these two grand champions, Van Natta & Son's exhibitor's herd was undefeatable. The herd display throughout was magnificent and the competition so keen that with the exception of the exhibitor's herd, there was no guessing at the winners ahead of the awarding.

ABERDEEN ANGUS.

Lovers of the "doddies" found a quality show at Des Moines, Iowa. While the exhibit was not large as compared to some of the other breeds, the classes furnished the best possible kind of entertainment for those who were watching the placing of the ribbons. One hour or more was frequently consumed in selecting the winners in a single class and when the judge had given in his decision there was almost always a rush from the center of the ring to inspect the animals at closer range. The old-time rivalry between the herds of A. C. Binnie, of Alta, Iowa, and Otto V. Battles, of Maquoketa, Iowa, and W. J. McHenry, of Denison, Iowa, was renewed as soon as the first class entered and it promises to continue warm throughout the season. McHenry and Binnie are making a fairly even race for the first honors without enough of a lead on the part of either to make them feel secure for the rest of the circuit. Mr. W. J. Miller, of Newton, Iowa, made it warm for the winners in many classes. Stanley R. Pierce, of Creston, Ill., acted as judge the first day, while Charles Escher placed the remainder of the ribbons. The class of aged bulls was won by the champion of last year's fair, Glenfoil Thickset 2d, owned by McHenry. In the ring of senior yearling bulls another of the leaders in last year's fair was placed at the head of the list. Quality Prince, last year's best in the senior bull calf class, winning the honor for McHenry. The class of aged cows caused the judge the most annoyance of any class during the first day. Opinion among the onlookers was well divided and it would have required a sitting vote to determine whether the "ayes" or the "nays" had it when the order was given. Two types were contesting for the first place. Binnie's Abbess McHenry 6th and McHenry's Pride McHenry 53d represented the low-down, thick-set type, carrying a very heavy and what the judge considered an excessive amount of flesh for a breeding animal. Queen Lass of Alta 3d, owned by Binnie, and Battles' Gay Bonnie Lass on the other hand were of the smoother type with more quality and in nearer breeding condition. The first prize winner, Binnie's Queen Lass of Alta 3d, Mr. Pierce declared to be one of the best handlers he had ever placed his hands on. Throughout the classes of two-year-olds, senior and junior yearlings, the competition continued very strong, the decision usually going to the smoother heifers. The junior yearling heifer class was an especially puzzling one, the superior finish and smoothness of fleshing on McHenry's Pride McHenry 73d finally bringing the victory into the McHenry herd. In the heifer calf classes Binnie was awarded the first place with McHenry stuff a close second. The senior, junior and grand championships all went McHenryward. The blues came with such regularity that Mr. McHenry at last seated himself on a chair out in the ring and complacently watched the judge and clerks put on the blue and purple ribbons. Glenfoil Thickset, Quality Prince, Barbara McHenry 24th and Blackbird McHenry 76th are a quartet of which any man might justly be proud.

RED POLLED.

Prof. Wayne Dinsmore, of the Iowa State College at Ames, placed the awards in the splendid rings of the Red Polled cattle shown at the Iowa State Fair. D. E. Clark's aged bull, Durock, climbed from his position as third at last year's fair and won first in his class and the championship of this dual purpose breed. Logan, shown by Clouss, still held his place as second in the class of aged bulls, while Graff's Ito, last year's best two-year-old, had to be content with third among the matured bulls. Durock is a large, thick-set bull, much on the beefy order, with a smoothness and finish that made it impossible to beat him at Des Moines. Cora V., the champion cow, beat Inez, last year's champion, for first honors. She is a very good example of the dual purpose cow, being medium low set, large, with plenty of length of body, while at the same time she carries an udder that some of the dairy breeds would have a hard time to find room for.

POLLED DURHAMS.

Each year the same number of the leading herds of Polled Durhams appear at the Iowa State Fair. As if arranged by schedule, when one breeder drops out of the contest for a season another stands ready to fill in the gap so that a representative showing of the breed may be made. Messrs. Hadley of Indiana and Smiley of Wisconsin were among the exhibitors a year ago, but their places were filled this season by two new Iowa exhibitors, J. J. Williams of Grandview and Jacob Marti of Lansing. Both breeders presented well grown and fitted entries and had no difficulty in securing their shares of the prize money. Williams' herd bull, Sugar Hill Marshall, although appearing in little better than field shape, possessed such breed character and general excellence as to give him undisputed title to the grand championship. He is unquestionably a strong representative of the breed. The judging was done by Mr. L. G. Shaver, of Kalona, Iowa, who has established a reputation as a breeder of Polled Durhams. His decisions were acceptable to exhibitor and visitor alike.

GALLOWAYS.

"There are not enough of them, but the animals are of the first quality," is the way E. T. Davis, of Iowa City, Iowa, judge of the Galloway exhibit, characterized the show in this department. Most of the classes were not full, but, nevertheless, lovers of the shaggy backs were enabled to see at least one or two excellent representatives of the breed in every class. They showed quality, finish and breeding throughout the show.

FAT STEERS.

Whenever the show ring competition becomes a battle of the breeds, things get lively at the ringside. The liberal prizes hung up for fat steers did not bring out a very large response from any one breed, although each one had some good representatives. J. R. Peak & Son, of Winchester, Ill., and W. H. Dunwoody, of Minneapolis, Minn., won the championships in their respective classes of Shorthorns. Makin Bros., of Grandview, Mo., and Cargill & Price, of LaCrosse, Wis., showed the winning animals in the grade and the pure-bred classes of Herefords. The Angus awards all went to W. J. Miller, of Newton, Iowa. Then the six winning animals were lined up and a committee composed of Thomas Mortimer, Charles Escher and Capt. T. E. Robson, the judges respectively of the three breeds represented, were appointed to choose the grand champion fat steer of the fair. Just what happened when the committee consulted would be hard to say. Very likely each man wanted to be real generous and so voted for the other fellow's favorite breed. Maybe that was the way of it and maybe not. Anyway, the committee refused the splendid opportunity they had of choosing the winning fat bullock and agreed to disagree. As the result, Prof. John A. Craig was called in to settle the matter. It was a difficult job for Prof. Craig, with the lovers of the three breeds looking to him for help, but he was game. After a close examination he gave the first place to the grade Angus steer, My Choice, owned by Mr. Miller. My Choice is a splendid example of block fitness with the exception of a little lack of filling in the hind quarters. He is low set, smooth and well fleshed, but more meat in the thighs will improve him. After the cheering on the part of the lovers of the doddies had died down the groups were brought in. The committee again looked them over as before, and with the same results. Professor Craig was again called to decide the matter, and this time he voted for the Shorthorns, making the trio of grade Shorthorns shown by Mr. Dunwoody the grand champion group. While the Angus group had the grand champion steer the other two steers were by no means mates for him. On the other hand, the Short-horn trio were all strong individuals, uniformly well built, and while not carrying the flesh of the best Angus, were nevertheless superior to the Angus and Hereford threes in the average type and fitness.

DAIRY BREEDS.

Heretofore the Iowa State Fair has been one of the strongholds of beef cattle in the corn belt and the dairy cow has been given but secondary consideration. This season, without crowding or detracting one bit from the beef cattle display, an exhibition of dairy cattle was staged which was a most creditable showing and one which has or will incline many a man toward dairying and the breeding dairy animals. There is a large place in the corn belt for the dairy cow and many a man is today recognizing the fact. There is more downright dairy enthusiasm in the corn-belt states now than there has ever been before, and the cow culture movement is, as yet, scarcely more than nicely started. It requires no gift of prophecy or no exceptional intimate acquaintance with conditions to anticipate an unparalleled growth of interest in dairying and dairy stock. Admiring crowds lingered long at the ringside when classes of Ayrshires, Guernseys, Jerseys and Holsteins were being judged. The interest manifested in the exhibits made by the breeders of Iowa, Kansas, Illinois, Wisconsin and Massachusetts was not of an idle curiosity sort, but rather a manifestation of genuine appreciation. The dairy cow is, in reality, gaining her rightful recognition in the great corn and clover belt. The initial performance at Iowa last week was a good beginning; let the good work continue.

THE GUERNSEYS.

There was not a poor class of Guernseys entered the ring at Des Moines last week, and in nearly every instance representatives from at least four herds were presented. In all there were six exhibitors in this department of the show—four from Iowa and two from Wisconsin. The largest exhibits were made by Fox Bros., of Waukesha, Wis., who showed twenty-four head, and Major Howard Greene, of Genesee Depot, Wis., who had eighteen entries on the ground. In the aged bull class there was chance for an honest difference of opinion. The noted cow culturist, Mr. W. W. Marsh, of Waterloo, Iowa, had Lord Mar in the ring. He is, every inch of him, a show bull and from a strictly show ring standpoint would be hard to beat. His carriage and general appearance are something wonderful, and then, in addition, he has a long, well-rounded body which shapes neatly into his fore and hind quarters. An abundance of quality and a beautiful coat combine to finish him off into an animal hard to turn down. There were other grand individuals in the ring, however, and Professor Van Pelt, the judge, had far from an easy task in keeping them out of first money. Major Greene's Glenwood's Stranford and Fox Bros.' Golden Bee, considered from the production standpoint, were unquestionably the best sires in the ring, but neither bull had the show ring qualifications of Lord Mar. Mr. Greene's bull was wholly out of condition, having entered the ring from the hospital, and so showed entirely to a disadvantage. If he does not have another setback this son of Glenwood Boy of Haddon and Stranford's Princess will be heard from on this season's circuit. In the cow and heifer classes the Wisconsin breeders had first choice of the assortment of ribbons, although in Iowa exhibitors presented only extremely classy animals. Fox Bros.' Duenna B. stood above Mr. Marsh's Glow of Rose Farm in the aged cow class by reason of her superior Guernsey character. A two-year-old daughter of Galaxy Sequel and Financier, and a right good one, too, had to give place to Laura of Brook Hill of the Greene herd. This young thing is really the very embodiment of things wished for in the dairy animal. Messrs. Quarton and Wilcox &

Stubbs each had a smaller number of exhibits, and both succeeded in carrying away a nice string of ribbons.

HOLSTEINS.

For a large part the war of the "black and whites" was carried on by contending forces recruited from the herds of Messrs. W. B. Barney & Co., of Hampton, Iowa, and F. P. Knowles, of Auburn, Mass., and Howell, Mich. The Easterners put up a good fight, but in the majority of the engagements Barney came out the victor. Mr. Frank White, also of Hampton, Iowa, and E. M. Castle & Sons, of Joy, Ill., had a limited number of entries which at times made things interesting for contestants sent forward by the larger exhibitors. In the aged bull class Professor Van Pelt, who tied the ribbons, found the Barney bull, Dijkstra Beauty Lad, had the necessary qualifications to entitle him to stand at the head of his class and later to become the champion of the Holstein show. Although he weighs better than 2,300 pounds, his closest rival, Artis Mercedes Posch, was larger and heavier. The eastern bull, however, did not have the quality nor the well-developed dairy conformation and general indicativeness possessed by the Iowa sire. It took much careful study and close calculating upon the part of the judge to correctly place the aged cows. The class was uniformly good throughout, but Parthenae Hengerveld, Huntress C. and Lady Ona Hiljoard, of the Barney, Knowles and White herds, respectively, had somewhat better developed and organized milk producing plants than their six ring mates and so stood at the head of the line in the order named. A yearling, Fokje Fontana, brought forward by the Massachusetts breeder, proved a sensation in her class and handily captured the blue without any hesitation. She is a remarkably well-bodied heifer, has lots of quality and is already equipped with a system of milk veins which would do justice to a female considerably older. The remainder of the contest was well fought out, but was devoid of anything spectacular.

JERSEYS.

Three firms, Hunkeydory Farm, of Pella, Iowa; Smith Bros., of Cameron, Ill., and J. B. Smith, of Beatrice, Neb., were the only Jersey exhibitors. Dixon & Bruins, of Brandon, Wis., had expected to be on hand with a nice string of imported animals, but finally failed to make connections. The non-appearance of this herd of course seriously weakened the show. The three herds, representing as many states, made a very creditable showing, and Prof. Hugh Van Pelt had some problems to solve placing the classes. Many of the animals, in at least one of the herds, were making their first apearance in a large show ring and perhaps did not show to their very best advantage. This breed, which in all probability is one of the oldest of the dairy breeds, is meeting with more favor in the corn belt than it ever has before. We hope to see the state fair exhibits of this and other dairy breeds still larger another year.

AYRSHIRES.

If the sturdy Scotchmen living "in the county of Ayr in the southwest part of Scotland" could make a better showing of Ayrshire cattle than was seen at Des Moines last week, there is many a man living in the "corn belt" today who would like to be shown. Mr. John M. Oakey, manager of the Barclay Farm, at Bryn Mawr, Pa., presented a herd of this breed which was but little short of a wonder. It would indeed be ponderously strange if, after seeing such strings of Ayrshires lead through the ring, some converts for the breed were not made and the indifferent breeders be inclined to strengthen their faiths in "the old reliables." A prominent Guernsey man, standing at the ringside and feasting upon the sights before him, was heard to remark: "I have often thought that if I was not breeding Guernseys I would want to have a herd of Ayrshires; now I know it." Of course, the Barclay herd is one of the very best in this country. On August 1st it held the leading position for the United States in the official milk and butter tests carried on by the Ayrshire Breeders' Association. Forty of the Barclay Farm cows and heifers and three bulls have already qualified for advanced registry and fifteen of the cows have an average record of 11,058 pounds of milk and 529 pounds of butter for one year. The reputation of this herd, it will be seen, does not rest upon individual performances, but rather upon the work of the entire herd. The average record for the forty A. R. cows was 9,451 pounds of milk and 448 pounds of butter. As a show aggregation the Bryn Mawr herd is entitled to just as high commendation. It had no competition outside of itself at Des Moines last week, but any competing herd to have changed the order of things would have had to "go some." The judge, Mr. Hugh Van Pelt, of Ames, Iowa, took genuine pleasure in presenting each animal with a nice new ribbon to add to the collection previously won.

HORSES.

Prof. C. F. Curtiss, superintendent of the horse department of the Iowa State Fair, has been remarkably sucessful in building up that department since he took his place on the board of directors. Its growth has necessitated the use of temporary quarters to care for the overflow, and coincidental with this there has come an improvement in quality in practically all of the classes. The Percherons, the Belgians and the Shires were exceedingly strong this year, though there was a temporary falling off in the Clydesdales. The American carriage horse class has grown in popularity and in importance, and no feature of the fair held the visitor better than this very class. Professor Curtiss last week proved himself to be a tactful disciplinarian. He inaugurated for the first time in the American show ring the plan of allowing the judge alone in the ring while at work, in addition, of course, to those who had charge of the animals. This plan worked admirably and was keenly appreciated by the visitors. By the use of their catalogs they had ample opportunity to study each individual animal and without asking a single question could readily inform themselves concerning the ownership and breeding of every animal shown. Men have been asking for this kind of system in the judging ring ever since fairs began, and to Iowa must be given the credit of leading off and thereby setting a pace for other fairs to follow.

PERCHERONS.

The showing of Percherons at the Iowa State Fair in 1908 was conceded to have been the best ever made in an Iowa show ring, and this year's exhibits were about equal in number, but superior in character to those of last year. The judging was done by Prof. W. J. Kennedy, of the Iowa Agricultural College, who in numerous instances had some very close decisions to make. Of the thirteen aged stallions led into the ring but six were sent to the barn upon first inspection. That retirement still left a short leet of seven, and among this number were some of the best stallions that have left La Perche in recent years. Crouch's Carnot, being a horse of pronounced Percheron character, almost perfect action, with grand carriage and a general masculine appearance, was an easy winner, but the other ribbons were not as easily placed. In the final shakeup Marathon, a very classy horse owned by C. O. Keiser, of Keota, Iowa, landed in sixth place, although many would have preferred to have placed him nearer the top. The wonderful draftiness of Burgess' big horse, Gafrannus, won him a blue ribbon in the three-year-old class, and the same qualities led to his selection as the grand champion of the breed. Gafrannus and Carnot are both picked horses. One has it over the other in weight and general draftiness and the other excels in breed type, in action, in attractiveness and masculinity. A dark gray, Gantret, owned by Frey, was quite a favorite with the onlookers, but he did not suit the judge as well and so was left in fourth place. From one standpoint some of the most pleasing classes were those filled by horses bred by the exhibitors. The showing was extremely creditable in every respect. Messrs. McMillan, Finch and Maasdam & Wheeler were the most extensive exhibitors of American-bred horses and won the major portion of the awards. Burgess' aged mare, Castille, once more had the right of way to the head of her class and the grand championship. Her position was also protected by a stable mate, Strawberry, a mare almost identical in type and color to the older mare. The team balanced the scales this year at 4,610 pounds. They are a grand pair and easily outrank anything being exhibited in this country. The third and fourth horses, McMillan's Flinch and Lucy, are similar in type, but not so heavy and drafty. They are, nevertheless, exceedingly good mares. Crouch's three-year-old mare, Gauloise, a beautiful, drafty, dark gray, was well deserving of first place in the next group. McMillan's Annette, a smaller, but a splendidly built animal, was second.

BELGIANS.

Belgians stood next to the Percherons in the strength of their exhibit at the Iowa fair. The show was not only a large one, but it was good from the standpoint of quality as well. Finch Bros., with a fine string, Lefebure with a total showing of twenty-seven head, and Crouch & Son with their large exhibit, including the champion mare and stallion, were the leading winners in the ring. Richelieu, shown by Crouch & Son, was king of the Belgian show. He is a fine type of what is wanted in a first-rate Belgian. Massive in his very movements, deep chested, heavy in the body and very short in the legs, Richelieu stood easily at the head of his kind. This type was held to very consistently throughout the showing. It was hard for a horse without depth of chest and a heavy body set low to the ground to win in the Belgian classes. Richelieu had set the pace, and those who followed him in wearing the blue and purple had to show his type before Robert Ogilvie placed them at the top. The champion mare was a three-year-old, Diane die Kat, also owned by Crouch & Son. This mare possessed style, finish and action at once manifestly superior to anything that the aged mare competition furnished. Something in her snap and smoothness brought out the admiring remarks of the onlookers almost as soon as she was led into the ring. Crouch & Son won the first three places in the class of three-year-old stallions with a trio very similar in type, heavy and strong in the body and close down to the ground. Irvine won the ribbon among the two-year-olds, while the laurels in the still younger stuff went largely to Finch Bros. on the stallion classes and to Lefebure in the mares.

SHIRES.

Trumans' Pioneer Stud Farm showed at the Iowa State Fair last week. As to the quality of the Shire exhibit, "what further need have we of evidence?" But one horse succeeded in getting a place above any of the horses shown by this Illinois firm. No one else was entitled to show for the champion stallion, so completely had they captured the blues in the stallion classes, so they were left to place the purple at their leisure. Their horses invariably possessed the scale and the heavy muscling that it takes to win in a Shire class, and they had been through the fitting to make them show at their best. Among the mares and colts Finch Bros. and Waltz brought out some good ones. The yearling mare competition was won by Finch Bros. on Black Maid. This mare showed in poor condition and with a rough coat, but, despite her handicap, she had the bone and Shire form to put her at the head of the class. The honors were determined by Robert Ogilvie, of Chicago.

CLYDESDALES.

Quite a number of Scotchmen gathered over at one end of the ring. The Clydesdales were there; that is why. Robert Miller, of Stouffville, Ontario, distributed the ribbons among the breeders. "Not a very large show of them, compared with the other breeds, but some excellent individuals," was the way the judge put the Clydesdale situation. And it is excellence rather than quantity that makes a breed. The main battle was between W. V. Hixson and John Leitch, with the other exhibitors occasionally stepping away with the honors. Hixson's Baron Clifton was the champion stallion. Stylish, a good acton, strong and cleanly built, is a good example of the breed. Scot Laddie's winnings were a source of pride to his owner, this promising young stallion having been bred and raised by Mr. Hixson.

DRAFT GELDINGS AND MARES.

A goodly number of choice draft geldings and mares lined up for the placing of Robert Ogilvie, of Chicago, Ill., on the big drafters. The gelding Trochu, shown by Robert Burgess & Son, was easily the pick animal in this department. He combined style, action, massiveness and excellent finish. Three of the Swift horses were in the ring, but outside of the money, each one having a defect fatal enough to place it down in the mind of the judge, one being too fine in the bone and the others faulty in their action. However, when it came time for the horses in harness the big packing firm had things their own way. The wheelers hitched to the dray won the money for draft team in harness. With the swing team added the four won the silver cup offered in that class, while the addition of the leaders added another cup to their list of trophies. The Swift teams excelled their rivals in massiveness, in style, and were more evenly mated.

HACKNEYS.

The judging of this breed by Mr. Alexander Galbraith, of DeKalb, Ill., called forth no small amount of favorable comment from breeders and exhibitors, and the display of the animals won frequent applause from the crowds, who were caught by the style and action of the British high steppers. The major portion of the most coveted ribbons went to the Truman's Pioneer Stud Farm at Bushnell, Ill.

GERMAN COACHERS.

Messrs. J. Crouch & Son, of Lafayette, Ind., were the only exhibitors in this department of the show, but what the exhibition lacked in competition was not wanting in excellence and attractiveness. In the string presented by them were many animals which have won ribbons in the best show rings both at home and abroad.

SWINE.

It was a good show. Some of the old timers, whose observation covers a period of time embracing about all the Iowa State fairs held since hogs became one of its greatest factors, expressed the belief that it was as good an exhibit of hogs as has ever been gotten together. The fact that there were some 600 head fewer than were in the pens last year really contributed toward the high average range of quality that prevailed in most breeds. This applies to the sale stuff in the barn as well as to those driven into the show rings.

In the competition of aged animals there were really some remarkable classes, not only on account of the large numbers, but as well because of the absence of any proportion of quality of a mediocre or ordinary character. The animals in these classes were meritorious throughout, regardless of breed. It is an item that speaks well for the breeders as a class, that the matured animals put forward in this fair possessed in an unusual degree the characteristic points indicative of vital force, virility and prepotency that are so highly essential in those sires and dams on which future generations of swine must depend for their excellence. This means that the show was one which, more than ever before, was a breeding hog show rather than one of fat carriers. The exhibitors have certainly made a marked progress in the important features of their profession in the last few years. They showed their good sense by bringing to this fair no animals that could be subject to the criticism of overfitting. The general hog-raising public will unfailingly profit by this situation. The middle classes were good. The pig classes were uniformly poor on their feet, due, of course, to the general endeavor to produce greater size than is natural to pigs.

DUROC JERSEYS.

Never before have the Durocs shown in such good form at the Iowa State Fair, as there were fewer animals over-fitted this year than has been the case in the past. There was also more balance in all the Duroc classes, the number of extremely large or extremely small hogs being reduced to the minimum. The difficult task of judging fell to Prof. W. J. Kennedy, of the Iowa Agricultural College, assisted by Prof. H. H. Kildee, of the same institution. These young men gave abundant evidence throughout all classes that they were not there to reward friends or punish enemies, and the result of the judging will do much to crystallize men's views of what constitutes the most sensible type of Duroc. A winner with these judges had to have scale, but this had to be combined with lots of quality, with good under-pinning. Almost to a man the exhibitors in the Duroc classes took their medicine graciously, and now that the event is over the 1909 Duroc show is regarded as the most satisfactory and successful show that has ever been held in Iowa. In the class of aged Duroc Jersey boars there was a string of good ones that has never been equaled. There was real Duroc Jersey character from start to finish, twenty-seven of them and no tail-enders. It was the ring of the show. There was no walk-away for anyone. Baxter & Comer's B. & C.'s Col. and Waltemeyer Bros.' Golden Model 2d were general favorites for first place, with scarcely a hair between them. The only hole the judges had to creep out of was to consider that B. & C.'s Col. was carrying his fully developed form, while his competitor, a year younger, had not established his mature character. So when the blue was handed to B. & C.'s Col. the act met with general approval. Later he proved his quality by capturing the ribbon for champion boar, any age. The class of senior yearling boars was the lightest of the breed. But there was a warm race in which Baxter & Comer's Protection's Col. came under the wire ahead of Allen & Miller's Model Chief 8th by a very close shave, while Harding's Chief Perfection was so close as to make it uncomfortable for the judges.

A bunch of twenty-one junior yearling boars were shown with quality enough to make it interesting. Browning's Defender headed the list, with Cooper's King Orion (that was later declared champion boar bred by exhibitor), Harding's King of Cols. and Thomas' Proud Inventor following in close order. The whole seven ribbon winners were not far from the first place. Twenty-seven boars answered the call in the class for six months old and under twelve. The prize takers were a toppy lot. Baxter & Comer led out with B. & C.'s Wonder, Harding with Critic's Model, Allen with Allen's Wonder, Browning with Chief Medicine Hat, Olson with Golden Model Again, Allen with Crimson the Wonderful, and Baxter & Comer with Wonder's Col., in order named. The first and last were litter brothers, as were also the two Allen boars. Fifty-four boars under six months made the biggest ring of the whole show. It was here that Sells & Son opened up something sensational. They took first and second on pigs by Crimson Wonder Again and out of H. A.'s Queen. Eight pigs out of a litter of nine were in the show. Two of the sows took first and second in class. This litter also furnished the pigs that took first on young herd, first on young herd bred by exhibitor, second on get of sire and first and fifth on produce of sow. There were twenty-five aged sows, a grand, good lot for those who admire real breeding sows, for that is what nearly every one of them was. Hanks & Bishop had a cinch on first place with Crimson Jewel. She was also champion sow any age. Shafer's Indiana Queen headed the senior yearling sow class, and also champion sow bred by exhibitor.

The remainder of the class were about all of a kind, with no more advantages to any than enough to justify the action of the judges in placing them. Other sow classes were filled with good representative animals, but nothing of outstanding merit. In all the herd competitions there were strings of herds that made the judges exercise a good deal of discretion. In aged herd Waltemeyer Bros. came to the front, and held to the lead on herd bred by exhibitor. These brought the best things of the show into competition on a new basis. In several cases first-prize winners suffered because the other individuals in the herd failed to carry enough quality to keep a winning balance.

POLAND CHINAS.

The task of placing the ribbons in the Poland China classes fell to the veteran breeder, W. Z. Swallow, of Waukee, Iowa, with Mr. James M. Stewart, of Ainsworth, Iowa as referee. Mr. Swallow's responsibility on the occasion was by no means light, but the ring arrangement made by Superintendent Johnson lightened his task. Raised seats were provided for the onlookers at the ringside, leaving to the judges ample passageway in which to do their work. There was not a single case of "getting lost" in the Poland classes, and Judge Swallow's half-century experience in the Poland China business stood him well in stead. He looked for a medium type with finish and he held to this type consistently throughout. The writer cannot recall a single case where all the Poland classes were passed on at the Iowa fair with such uniform satisfaction resulting as was the case this year. The Poland China show was about the best ever, with an evenness of quality not before brought together. The aged classes were better filled, both as to number and excellence, than ever before. Nobody has seen the same number of high-class aged boars in one bunch as the fourteen that opened the fair Monday morning. Francis & Sons' Meddler Keep On caught the blue because he was a little bit better than any other, but what the difference was no two men about the ring could agree on. But he also won championship on boar any age and nobody kicked. Meharry's Comptroller stood right up next, and only by a very narrow margin squeezed in ahead of Hemmerling's Regulator, that was lined up as third. Kramer's Perfect Spellbinder followed as fourth, as a good representative of the type that was the judges' ideal.

The senior yearlings were not a popular class and failed to follow the pace set by the aged boars, although Wellington & Spring's Walk Over 2d, that was placed at the head, was a deep, wide-backed fellow, worthy of stronger competition. The junior yearlings came to the front, retrieving the reputation of the yearlings. Wellington & Spring's Master Walk Over took first because he was superbly fitted, had a back, loin and ham made to order, a rear end to fit the score card, and a finish to the queen's taste. McFadden's Inspiration naturally followed. His good lines and striking masculine character entitled him to better fitting, and had he come in his best clothes there would have been a harder fight for head place. The Chiles boar, Preffer, carried one of the best ribbed-out backs in the show, with width of chest, great heart measure and short set neck, with finish and feeding quality that are sure to make a name for him in future show rings if he is given a fighting chance.

The boars six months old and under twelve were a right nice show, with both quality and variety. There were twenty-six of them, and the head end of the procession was right up to the average of the show. Chiles' Harvester was first by a scratch. Wellington & Spring came in with Look Me Over, a ripping good one, and Meharry was third with Illuminator. The degrees of difference were as close in this as in any class. No one had much room between him and the fellow below. Thirty boars under six months qualified. As a general thing, it was an ordinary lot, but Gosick's pig that was placed at the head was a dandy. Right all over, and smooth as silk, he was easily first. A brigade of nineteen aged sows came marching down the line, and they were a lot of beauties not often seen together. The Poland China breeders who made this show may well feel proud. If a better show has been made in the last decade it has not come under the eye of the writer. The judges were threatened with nervous prostration. After the first cull out, it was like trying to pick the best pin out of a paper. Meharry's Nannie was tried out for first place, and as she seemed to fit she was left there. She proved her worthiness by closing the show as champion sow any age. Nellie and Grace, both owned by Wellington & Spring, were placed second and third in the order named. They were as like as two peas, and it took guessing to tell why one was better than the other. Francis & Son's Margaret 6th was a logical fourth, and a queen, too. Every sow of the seven would be a promising candidate for honors at anybody's show. The class of sows for junior yearlings was also filled with real ones. Wellington & Spring's Lady Walk Over 2d was a good first, and in the windup was champion sow bred by exhibitor. Watson's second place sow was about as good, with symmetry, quality and finish that stamp her as a great sow. Later classes of sows were of the same order, with little to be said for any one that would not apply to all. The herd shows brought out an aggregation of true breeding animals that means much for the future advancement of the breed.

TAMWORTHS.

Mr. Wilson Rowe, of Ames, found that he had a task on his hands when he started in to judge the Tamworths. There were practically the same number exhibited as were exhibited in 1908, but there was an improvement in the quality. This breed attracted no small amount of attention during the entire week.

SHEEP.

From the standpoint of numbers the sheep department last week at the Iowa State Fair was not a marked success, though in all classes there was found as good material as will be shown at any of the fairs this fall.

FARMERS' TRIBUNE.

SIOUX CITY, IOWA.

Another Iowa State Fair—the fifty-fifth annual—has passed into history. Another magnificent live stock and agricultural exposition has once more testified to the progress the Iowa farmer has made in recent years. The management of this fair has again demonstrated its well-known ability to hold a successful large show. The farmers, as well as those indirectly dependent upon agriculture for support—and that includes nearly everyone living in the state have again realized that the money the state has spent in building up a great fair is well invested. The exposition was a great advertisement for Iowa. It bore witness to the fact that Iowa from an agricultural point of view is the peer of all her sister states. To praise the management for the splendid manner in which they handled the large crowds of visitors, the exhibitors and the concessionaires would be superfluous; everyone seemed to be satisfied. Financially, too, the fair was a success, though the net profits were somewhat below those of 1908. In that year receipts amounted to $136,100, while this year they amounted to $135,800. Had it not been for the fact that it rained nearly all day on Thursday, the attendance would have been a great deal larger and the profits correspondingly greater. As it was, the attendance totaled 216,000 for the week, as compared with 207,000 last year.

The 1909 exposition had perhaps a greater educational value than any show ever held in the state of Iowa. The Iowa State Fair has always been an educational institution of great value, the superior live stock, the large display of farm machinery, and other features having made it so. This year the exhibits of the State College at Ames, which were artistically arranged and unusually well displayed, made the show represent Iowa in a more complete manner than ever. The Iowa State Fair has for years been recognized as the best live stock show in the country.

In the agricultural building the State Department of Agriculture had a large display of a number of important agricultural products, such as alfalfa and sugar beets. The alfalfa was unusually well displayed. Samples of the various food products manufactured from it were exhibited, and figures showing the value of the crop as a feed for live stock, when fed in connection with corn and other grain products, were displayed in a conspicuous manner that apparently proved to be of great interest to many farmers, who stopped to make detailed inquiries with reference to growing alfalfa under the conditions prevailing on their farms. There is no question but that this display alone was worth thousands of dollars to Iowa farmers, particularly to those residing in sections where alfalfa is known to yield excellent returns and where it can be grown at a most excellent profit. While farmers who have never grown alfalfa were not indiscriminately advised to begin growing it on a large scale, many hundreds were advised to begin by seeding a small patch for the purpose of determining its adaptability to sections in which it has not been grown before. Once the farmer has learned that he can raise alfalfa to advantage he will soon realize its value as a forage as well as a soil-building plant.

One entire building was occupied by the State College in which the character of the work done in the different departments of the college was displayed in a very striking manner. It is impossible to call attention to all the departments that were represented in this building, such as the mechanical, engineering, civil engineering, farm crops, soils, agricultural, chemistry, dairy, horticultural and agricultural extension departments. Each department represented was of interest to every farmer on the grounds, and especially to the young men and women contemplating a course at the State College. Some departments appealed more strongly to the farmer than others. The exhibits in the soils department attracted a great deal of attention. A county soil map showing the different types of soils in the state attracted special attention. The map showed the Missouri loess belt in the western part of the state, the southern Iowa loess belt in the southern part of the state, the Wisconsin drift soils in the north central portion of the state, and the Iowa drift and Mississippi loess soils in the southern and eastern sections. The map was made from the soils collected from the portions of the state they represented, thus affording the farmers an opportunity to compare the soils of their respective counties with those in every other county in the state.

Another feature in this department was an exhibit showing the effects of cultivation on the water content of soils. A week before the fair opened the soils department took samples of a number of soils that had been differently treated with respect to cultivation. The water content of each of these samples was determined and the amount of water they contained was represented in a bottle opposite the sample of soil. From this exhibit we gathered that a field that had been fallow last summer contained, during the middle of August, 19.6 per cent of water; a cornfield, 15.2 per cent; a clover meadow, 16.2 per cent; oat stubble and clover, 11.3 per cent. Oat stubble that had been disced and harrowed before it was plowed contained 16.6 per cent, and a similar piece that had not been disced prior to plowing contained 14.1 per cent. This exhibit alone, in which the farmers seemed to take a great deal of interest, proved to be of immense value. It opened the eyes of many to the importance of conserving soil moisture by surface cultivation, and especially in the fall of the year in preparation for winter grains or for plowing. A difference of from two to four per cent of moisture in a soil in the fall of the year may mean the difference between success and failure in the raising of winter or spring grains. Ground that is plowed under favorable conditions in the fall is certain to produce a better crop of grain the following season than ground that is broken up when in a lumpy condition.

In recent years the phrase "better than ever" has almost without exception been applied to each succeeding state fair throughout the Northwest. So common has this expression become that it actually fails to convey any real meaning to the majority of people. As a matter of fact, this phrase has told the truth each year, and applied to the 1909 Iowa State Fair, it still tells a true story of progress. Last year there were 785 horses on the grounds; this year 940; and breeders were confident that from a standpoint of quality there was a still greater difference in favor of this years' show. Horses that had to take second place this year would easily have taken first a year ago.

In the cattle department the show was also much larger and better than last year. There were 887 head of cattle at this year's fair as compared with 627 a year ago. The Short-horn show was perhaps no larger than that of last year, but the quality was without a question better. The progress which the leading breeders have made in recent years in developing this breed is wonderful. The Herefords outnumbered those of last year and for quality fully held their own. The White Faces are evidently becoming more popular, and back of this growing popularity is their many good qualities which are becoming intensified as a reward for their faithful keepers. The Angus show was made almost entirely by Iowa men. The show was no larger than that of last year, due to the fact that several big breeders did not make an exhibit this year. The Galloways ranked in number and quality about the same as they did a year ago.

The show of dairy cattle was by far the largest that has ever been made at Des Moines. There were no less than 203 head on exhibition, comprising 74 Guernseys, 56 Jerseys, 45 Holsteins and 28 Ayrshires. It was evident, judging from the interest taken by visitors in these cattle, that Iowa farmers are taking more interest in dairying. The continued rise in the value of farm land and the growing demand for dairy products is certain to make dairying a factor of greater importance in years to come. Not dairying as it has been conducted in the past—mere cow keeping—but dairying in a businesslike manner. Those interested in dairying say that it will not pay to milk cows that are not high producers, and dairy-bred stock is the most highly developed in this line.

There was more activity in the sheep department than usual. Both in quality and numbers the show outranked that of last year by a good deal. It was also apparent that there was more interest taken by farmers in this department. Sheepmen reported having made many sales; in fact, some of them had sold out early in the week. Sheep are a good investment, and a small flock, at least, should be kept on every high-priced farm in the state.

The swine exhibit was not quite so large as last year, but there were close to 2,400 head in the hog pavilion as compared with nearly 3,000 last year. There were two main reasons for this decrease. First, the rules were such as to exclude second rate stock; and, second, the hog supply all over the country is short. There is no question but that there were as many first-class hogs in the pavilion as there were last year, so it may truthfully be said that from a quality point of view—and quality is the important consideration the hog show of this year was superior to that of 1908.

The machinery exhibit, as usual, was large. It was educational. Many new inventions were shown. When one attempts to look over the machinery at a great state fair one begins to realize how it is that the American farmer is able to produce food and clothing so abundantly for the best fed and the best clothed nation on earth and yet export vast quantities of products to foreign countries. To the inventors and manufacturers of farm and other labor-saving machinery the American farmer owes a debt that he can never repay. It is absolutely useless to attempt to get a comprehensive idea of all machinery exhibited at a modern state fair; one line is all any man can study thoroughly in the usual time at his disposal for such investigation.

REGISTER AND FARMER.

DES MOINES, IOWA.

With this issue of our paper going to press Iowa's great state fair is at its height. All Iowa seems to be there. And, then, we have our neighbors from Illinois and Nebraska and the Dakotas, and even from Kansas and Missouri. There are distinguished visitors from Washington, D. C., men from the agricultural department, public officials and politicians. And from the marts of trade, the great packing centers and grain centers, have come some of the captains of industry, tremendously interested in the great achievements of agriculture and stock raising which are exemplified on Iowa's fair grounds as nowhere else in all the world.

And all Iowa seems to be prosperous and happy. A great people, aglow with enthusiasm for the achievements of their state and of their fair, having brought with them the flowers of their flocks and their herds, their fields and their vineyards, and their happy, healthy families. Nowhere else in the world is there such a fair, for nowhere is there a region which can make possible such agricultural accomplishments.

The great barns and halls and sheds and canvass tents are eloquent in their testimony of the achievements of brains and industry. Science, theory, skill, hard work and common sense are all evident in these exhibits of the breeding pen and the breeding plat until it seems almost in some products the ideal has been attained and the highest development possible has been secured. Yet so it seemed a few years ago when we were just as proud of our great fair. The advancement has been marked since then.

GREAT CROWDS ATTEND.

Crowds have thronged through the gates since Friday the opening day, until it now looks as though the attendance would pass considerably beyond the 200,000 mark. Saturday was children's day and troops of happy children, Iowa's greatest product, laughed and cried and took reckless chances and had hair breadth escapes as children always do.

Sunday was music day. Thousands of people with music in their souls heard the Liberati band—a quiet, orderly, music loving throng—loath to leave when the stirring, patriotic Star Spangled Banner, with tremendous volume and harmony, was played, bringing the listeners to program of the week began on Monday with judging in all of the many their feet in a patriotic demonstration. Then the full and complete program of the week began on Monday with judging in all of the many departments, a remarkable showing of live stock and horses in the stock pavilion, band concerts morning, afternoon and evening; races, vaudeville, fireworks—a great variety of unusual entertainments.

EDUCATION ITS THEME.

More notable than ever was the fair this year as an educational institution. A building was assigned to the Iowa State Agricultural College, and in addition to a comprehensive exhibit gathered from all parts of the state of farm crops, soils, dairy, horticulture, forestry, animal husbandry, as well as the maintenance of departments in domestic science, agricultural engineering and the other departments of the school, there were daily lectures on practical and helpful topics. One end of this building was fitted up as a lecture room. It would seat about 400 people. Here crowds of earnest men and women gathered daily to hear the lectures of the Ames professors on subjects on which they are experts. There was a soil map on exhibition showing the soil of each county in the state. Farm equipment, models of silos and models of farm buildings were shown. A large collection of up-to-date dairy apparatus was on exhibition. The domestic science department showed a model kitchen. The unusual in the crop line—ginseng, sugar beets, popcorn, alfalfa, watermelons, bees and the making of honey were on exhibition in the college building. This was under the management of Prof. B. W. Crossley of Ames, who deserves much credit for his work.

INFORMATION WAS SOUGHT.

In every department among both superintendents and exhibitors alike there were men experienced in their particular lines and ready to answer questions which the true follower of agriculture is on the alert to ask. Considerable information on dairying was at hand. The largest and best exhibit of dairy cattle in the history of the state was entered this year. There is an increase in Guernsey dairy cattle in Iowa and the merits of this breed of dairy cattle were fully attested at the fair. Then there were Jerseys and Holsteins and Ayrshires in larger numbers than at previous fairs. There were 74 Guernseys, 56 Jerseys, 45 Holsteins and 28 Ayrshires on exhibition. There was a big creamery exhibit.

LIVE STOCK SUPREME.

Although last year's live stock exhibit was one of the largest ever shown in this country, the exhibit this year was still larger and better. There were 922 horses this year as compared to 765 last year. There were 888 cattle, as against 816 last year and 422 sheep as against 350 last year. The number of swine entered, however, was less than a year ago for the reason that the fair management would not permit the use of space for hogs which were brought only for sale purposes and not for exhibition or competition. Last year with the new swine pavilion, covering six acres, there was not enough room for the swine, largely because so many swine breeders brought a great many hogs to sell. In order to have sufficient room for the exhibition swine, this practice will no longer be permitted. The poultry show was a big one. The poultry house has been remodeled and the new exhibition pens were put in so that the poultry showed up well this year. The poultry industry is one of the important industries in the state, as testified to by the exhibit.

PREMIUMS LARGE.

The premiums paid amounted to $57,578. Of this sum $15,500 was paid in the speed department, $12,414 in the cattle department, $8,599 for horses, $3,203 for swine, $3,090 for agriculture, $2,413 for sheep, $1,835 for poultry, $2,000 for the farm crop exhibit and the remainder was paid out in the various other departments.

THE CAMPERS.

The tented city on the hill—the delightful camping grounds high up on the sloping hillside with the beautiful shade trees all about, was the largest in the history of the fair. More than 10,000 people camped there this year. They came from all parts of the state, family groups, neighborhood companies and parties of friends. The camping grounds were laid off in streets and the lots were numbered and then each camper was registered so that visitors wanting to look up their camping friends could ascertain the street and the number where their friends were camped by looking up the proper authorities. The city water mains now reach the camping grounds providing the convenience of plenty of water. Aggressive merchants and dairymen supplied the demands for meats, milk and groceries. There seemed to be every convenience. And it was surely a delight to the campers to arise early in the morning, make a study of certain exhibits in which they were especially interested before the crowds came, and then again, when tired with sight seeing, to retire to their tent and rest, just as they could do at home.

The new grand stand was another comfort this year. Built of steel, planned for comfort, safety and convenience, more than 17,000 people could be seated there and in the lawn space to the fore, with no chance for accident from an unsafe structure. And the evening concerts in front of the grandstand could be heard and enjoyed, which was not possible when seated in the old amphitheater. The new race track, built further to the west than the old one, proved a better and faster track than the old track.

THE MACHINERY.

There were acres of machinery, always interesting and fascinating, monuments to the genius of man and enabling mankind to gather harvests in a day which otherwise could never be gathered in months, perhaps not at all. The wireless telegraph station on the grounds, sending and receiving messages through the air which were caught by a station located three miles away (might as well have been one thousand miles it would have worked just the same), was observed with deep interest and appreciation by thousands of people. There was no threshing machine exhibit this year, owing to an agreement among manufacturers that they discontinue making exhibits at fairs.

The evening programs at the stock pavilion were deservedly more popular than ever. The horse show and fine live stock parade in the evening's program can scarcely be duplicated by any other show. The splendid animals, the aristocrats of their class, seem almost conscious of their superiority and move about on such occasions with a grace and dignity and intelligence that has a lesson for mankind.

THE PRIZE WINNERS.

We are not able to announce the long, long list of prize winners. It has been a busy task for the judges, as is always the case, and there is both joy and disappointment among the exhibitors. For the most part however, there is general satisfaction over the awards, as it is one of the principles of the Iowa State Fair management to be absolutely fair in all of its dealings. This has obtained for our fair the confidence of the people.

THE OFFICERS.

The officers of the Iowa State Fair and the members of the board of directors deserve great credit for their achievement and for the ability they have shown in keeping the fair clean and wholesome throughout.

We are all proud that Iowa has once again done credit to herself in her great annual agricultural exposition. Such an occasion is the only opportunity the world at large has of seeing the products which have indeed made this state famous and for which the state is celebrated throughout the whole civilized world.

THE NATIONAL SWINE MAGAZINE.

FREEPORT, ILL.

It may be that there have been better shows of good hogs than that held at Des Moines this year, but to try to compare this one with the other would only result in dispute, for those who attended this year's Iowa State Fair are firm in their belief that it was the best they ever saw and they have seen a good many, so they say. Going from one class to another, the close student of swine shows was impressed with the fact that the western breeder is paying more attention every year to the fitting of his hogs. There were animals on parade there that gave every evidence of having had close attention every day from the time they were farrowed, and come to look into the record of the best showmen, they have made their records on fitting; for often there was nothing between two animals save the beauty with which they were put into the ring. If it were possible to feed two hogs exactly alike, both being the same in conformation and type and one as good as the other in all sections, one being fitted to the pink of condition and the other set down in the ring with poor grooming showing all over him, then the task of pointing out what good grooming and bad grooming was, would be easy.

Beginning with the Poland China department and continuing down through the Durocs and Berkshires, Hampshires, Tamworths, Yorkshires and other breeds, there was a remarkable advancement shown in the manner of fitting and grooming. The way the hogs were put before the judges was greatly improved as well. Last year the swine judging pavilion was not completed, and when the hogs were set down before the judges, they were each hurdled into a location by their owners or attendants; but when the porcine element showed up this year they were agreeably surprised by seeing that the pavilion had been finished, that in it there were pens for each hog that was driven into the ring in each class. These pens were arranged about the sides of the arena and, between them and the seats which slope upward to the back of the pavilion, there is an alley or broad walk, in which the onlookers may inspect the classes for themselves from the outside of the arena. This makes the Iowa swine pavilion about the leader among this sort of structures. It has always been hard for the judge to get to his work among a lot of spectators in the show ring and with the hogs placed about the ring so irregularly. This year the work was much easier than before.

As regards the number of hogs shown compared to last year we might say there were hardly as many. Several causes could bring this about. Firstly, and the reason that seems to us to be of the most importance is the fact that stares one in the face that there are not as many hogs in the country as there were last year. This condition is as true of the breeders who are working for the betterment of their herds for show purposes as it is of the men who have been growing solely for the scales. The rather backward spring had something to do with the numbers of spring pigs saved and carried into the summer.

The Iowa fair is pretty cosmopolitan in its porcine clients. The exhibitors are usually coming from as many as fifteen states, with Iowa in the lead for numbers exhibited every time. Kentucky, Missouri, Kansas, Illinois, Minnesota, the Dakotas, Wisconsin, Indiana, Ohio, Michigan, and some other states we cannot recall instantly, had hogs on exhibition. One cannot tell what state a swine breeder is from by his looks or his manner of conversation, for the good fellowship that flows through the fraternity cuts away all distinctions. Visitors who are breeders, though not showing this year, were in attendance in goodly numbers.

Owing to the convenience of the judging arena this work went forward with greater haste than usual. No one was allowed in the arena to blockade aisles and alleys; showmen and helpers alone being on the floor when the judges were making the awards. As soon as the prizes were hung up, the spectators were invited to take a look at the ribbon winners, each arranged in its order in a series of pens built in the center of the arena. One hundred seventy-nine exhibitors entered about 2,300 swine for premiums amounting to $3,203.

WESTERN POULTRY JOURNAL.

CEDAR RAPIDS, IOWA.

Never were the exhibitors more agreeably surprised than this year, with an innovation of the advance methods put in force by the State Fair management in the complete renovation of the Poultry Building and the installation of a complete cooping outfit of the famous Empire make. The improvement is certainly well deserving and highly appreciated by the Iowa fanciers. Not only was there an improvement in building and coops but in the entire system of management of the entire department.

Additional prize money has been added to a very large classification.

Birds are cooped singly and in pens properly classified so that visitors to the department can easily compare each and every bird in the class, giving the show some character.

Exhibits are now fed and cared for by competent assistants not requiring personal attention by the owners.

The show this year in general was one of the best all around quality exhibits that has graced an Iowa State Fair in many a year—not as large as some years in the past, due to the fact that many fanciers did not thoroughly understand the new system of cooping and the fact that exhibits are now fed and cared for by the management—but look out for next year. We predict now one of the largest and best fall shows held in the entire mid-west and that breeders who have never thought of showing at the Iowa State Fair will at least send a few. It will surely be worth their time and trouble.

AWARDS

IN

LIVE STOCK DEPARTMENTS

IOWA STATE FAIR AND EXPOSITION
1909

HORSE DEPARTMENT.

Superintendent ....C. F. Curtiss, Ames.

STANDARD BRED.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; E. J. and M. D. Brouhard, Colo, Iowa; John W. Bruere, Conway, Tex.; Loren Dunbar, Earlham, Iowa; H. F. Heath, Collins, Iowa; E. H. Jackson, Jefferson, Iowa; Tom James, Des Moines, Iowa; King Hill Stock Farm, St. Joseph, Mo.; O. A. Luce, Des Moines, Iowa; O. J. Mooers, Columbia, Mo.; C. E. Monahan, Des Moines, Iowa; C. L. McClellan, Lowden, Iowa; J. R. Peak & Son, Winchester, Ill.; L. H. Pickard & Bro., Harlan, Iowa; C. C. Prouty, Des Moines, Iowa; Fred Senftle, Des Moines, Iowa; Shaw Bros., Mitchellville, Iowa; James Watt, Des Moines, Iowa; G. E. Williams, University Place, Neb.

AWARDS.

Judge ....Prof. John A. Craig, San Antonio, Tex.

Stallion Four Years Old and Over—First, Hail Cloud 23606, James Watt; second, Washington McKinney 35751, King Hill Stock Farm; third, Tommy Doyle 50261, J. R. Peak & Son; fourth, Capo 31066, L. H. Pickard & Bro.

Stallion Over Three and Under Four—First, Amber King 49925, Shaw Bros.; second Moco, Thos. Bass, third Convictor, 48029, E. H. Jackson; fourth, Amatum, 44152, John W. Bruere.

Stallion Over Two and Under Three—First, Van Line 47416, E. J. & M. D. Brouhard; second, John Hail 47695, James Watt; third, General Constantine 47663, C. C. Prouty.

Stallion Over One and Under Two—First, Clear the Way 50296, J. R. Peak & Son; second, Will Tainer, E. J. & M. D. Brouhard; third, Attorney Onwood 49055, L. H. Pickard.

Horse Foal—First, Wake Up Jacob, J. R. Peak & Son; second, Puff, E. J. & M. D. Brouhard; third, King Hail, James Watt.

Mare Over Four Years Old—First, Noretta, Vol. 17, J. R. Peak & Son; second, Rena Russell, O. J. Mooers; third, Vivian Darling, Vol. 17, J. R. Peak & Son; fourth, Wizard, J. R. Peak & Son.

Filly Over Three Years and Under Four—First, Peggy Cabell, O. J. Mooers; second, Baby, Vol. 17, J. R. Peak & Son; third, Maydolin, E. J. & M. D. Brouhard.

Filly Over Two Years and Under Three—First, ————, O. J. Mooers, second, Georgia, Vol. 18, J. R. Peak & Son; third, Silverheels, Fred Senftle.

Filly Over One Year and Under Two—First, ————, Thos. Bass; second, Mary Queen, Vol. 18, J. R. Peak & Son; third, See Saw, E. J. & M. D. Brouhard.

Mare Foal—First, Queen, E. J. & M. D. Brouhard; second, Florey Mont, J. R. Peak & Son; third, Exira Boy, O. A. Luce.

Get of Stallion—First, J. R. Peak & Son; second, E. J. & M. D. Brouhard; third, James Watt.

Produce of Mare—First, J. R. Peak & Son; second, E. J. & M. D. Brouhard; third, J. R. Peak & Son.

AMERICAN CARRIAGE HORSES.

EXHIBITORS.

Chas. T. Ayers & Son, Osceola, Iowa; Thos. Bass, Mexico, Mo., E. J. & M. D. Brouhard, Colo, Iowa; John W. Bruere, Conway, Tex.; Dewey & Langley, Amboy, Ill.; H. F. Heath, Collins, Iowa; E. H. Jackson, Jefferson, Iowa; Chas. C. Judy, Tallula, Ill.; King Hill Stock Farm, St. Joseph, Mo.; C. L. McClellan, Lovden, Iowa; Morgan Horse Farm, Plainfield, Iowa; O. J. Mooers, Columbia, Mo.; C. E. Monahan, Des Moines, Iowa; S. B. Mills, Ames, Iowa; C. E. Mundell, Lucas, Iowa; J. R. Peak & Son, Winchester, Ill.; L. H. Pickard & Bro., Harlan, Iowa; Shaw Bros., Mitchellville, Iowa; P. F. Smith, Montezuma, Iowa; C. C. VanMeter, Sherman, Ill.; G. E. Williams, University Place, Neb.

AWARDS.

JUDGE ....GEORGE M. ROMMEL, Washington, D. C.

Stallion Four Years Old or Over—First, Advance Guard 45938, O. J. Mooers; second, Alexander Jester 1979, Chas. C. Judy; third, Axindale 44449, Shaw Bros.; fourth, Tommy Doyle 50261, J. R. Peak & Son.

Stallion Three Years Old and Under Four—No first premium awarded; second, Amber King, 49925, Shaw Bros.; third, Convictor 48029, E. H. Jackson.

Stallion Two Years Old and Under Three—First, Admiral George Dewey 5008, Dewey & Langley; second, Van Line, 47416, E. J. & M. D. Brouhard; third, Mack's Best, 4796, J. R Peak & Son.

Stallion One Year Old and Under Two—First, Rear Admiral, Dewey & Langley; second, Will Tainer, E. J. & M. D. Brouhard; third, Leader of Fashion 50287, J. R. Peak & Son.

Stallion With Three of His Get of Either Sex—No first premium awarded; second, P. F. Smith; third, Chas. C. Judy.

Mare Four Years Old or Over—First, The Lavender Lady, O. J. Mooers; second, Point Lace, O. J. Mooers; third, Emlin Maid, Thos. Bass.

Mare Three Years Old or Under Four—First, ————, O. J. Mooers; second, Peggy Cabbell, O. J. Mooers; third, Baby, Vol. 17, J. R. Peak & Son.

Mare Two Years Old and Under Three—First, Duchess Bonfairy, O. J. Mooers; second, Verilla, E. J. & M. D. Brouhard; third, Georgia, Vol. 18, J. R. Peak & Son.

Mare One Year Old and Under Two—First, Pearl Morgan, S. B. Mills; second, Belle of Amboy, Dewey & Langley; third, Perfect Lady, E. J. & M. D. Brouhard.

Mare and Foal of Either Sex—First, Nettie, S. B. Mills; second, ———, P. F. Smith; third, ————, P. F. Smith.

Foal Under One Year, Either Sex—First, Lady Pactolus, S. B. Mills; second, Knox All, P. F. Smith; third, Queen of All, P. F. Smith.

Champion Stallion, Mare or Gelding, Any Age—First, Advance Guard, O. J. Mooers; second, Admiral George Dewey, Dewey & Langley.

ROADSTERS.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; E. J. & M. D. Brouhard, Colo, Iowa; Buckman Bros., Monroe City, Mo.; Dewey & Langley, Amboy, Ill.; S. J. Gabbert, Dearborn, Mo.; L. E. Gooding, Des Moines, Iowa; Chas. C. Judy, Tallula, Ill.; O. J. Mooers, Columbia, Mo.; C. E. Monahan, Des Moines, Iowa; J. R. Peak & Son, Winchester, Ill.; C. C. Prouty, Des Moines, Iowa; Shaw Bros., Mitchellville, Iowa; G. E. Williams, University Place, Neb.

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Mare or Gelding—First, Jack of Hearts, Thos. Bass; second, ————, Chas. C. Judy; third, Florence, J. R. Peak & Son; fourth, Duke-o-Bells, O. J. Mooers.

Pair of Mares or Geldings, or Mare and Gelding—First, Noretta & Florence, J. R. Peak & Son; second, Harry M. and Cynthia, Chas. C. Judy; third, ————, O. J. Mooers; fourth, Mean Enough and Wizard, J. R. Peak & Son.

Champion Stallion, Mare or Gelding—First, ————, J. R. Peak & Son; second, Jack of Hearts, Thos Bass.

RUN-ABOUT.

EXHIBITORS.

E. J. & M. D. Brouhard, Colo, Iowa; R. Bonde, Story City, Iowa; T. C. Evans, Kansas City, Mo.; L. E. Gooding, Des Moines, Iowa; Chas. C.

Judy, Tallula, Ill.; O. J. Mooers, Columbia, Mo.; C. E. Monahan, Des Moines, Iowa; Morgan Horse Farm, Plainfield, Iowa; J. R. Peak & Son, Winchester, Ill.; C. C. Prouty, Des Moines, Iowa; G. E. Williams, University Place, Neb.

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Single Mare or Gelding—First, The Lavender Lady, O. J. Mooers; second, Point Lace, O. J. Mooers; third, Florence, J. R. Peak & Son; fourth, Black Bess, C. E. Monahan.

Single Mare or Gelding to be Shown by Lady—First, The Lavender Lady, O. J. Mooers; second, Point Lace, O. J. Mooers; third, Mean Enough, J. R. Peak & Son; fourth, Black Bess, C. E. Monahan.

FAMILY TURNOUT.

EXHIBITORS.

R. Bonde, Story City, Iowa; Thos. Bass, Mexico, Mo.; Chas. C. Judy, Tallula, Ill.; O. J. Mooers, Mexico, Mo.; C. E. Monahan, Des Moines, Iowa; J. R. Peak & Son, Winchester, Ill.

Best Single Horse, Family Turnout—First, Black Bess, C. E. Monahan; second, Goldie, R. Bonde; third, Noretta, Vol. 17, J. R. Peak & Son.

BUSINESS HORSES.

EXHIBITORS.

H. C. Davis, Ames, Iowa.

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Best Exhibit of Two Horses Shown to Delivery Wagon—First, H. C. Davis.

HIGH STEPPERS.

EXHIBITORS.

Buckman Bros., Monroe City, Mo.; R. Bonde, Story City, Iowa; H. C. Davis, Ames, Iowa; T. C. Evans, Kansas City, Mo.; L. E. Gooding, Des Moines, Iowa; O J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Pair Mares or Geldings, or Mare and Gelding, 15-2 *and Under*—First, The Lavender Lady and Mate, O. J. Mooers; second, Mean Enough and Wizard, J. R. Peak & Son; third, Mackerlain and Adalaid, H. C. Davis.

Pair Mares or Geldings, or Mare and Gelding, over 15-2—First, Red Wing and Red King, T. C. Evans; second, All But One and Mate, O. J. Mooers; third, Florence and Solo, J. R. Peak & Son.

Single Mare or Gelding, 15-2 *and Under*—First, The Lavender Lady, O. J. Mooers; second, Mean Enough, J. R. Peak & Son.

Single Mare or Gelding, over 15-2—First, Bell King, T. C. Evans; second, Noretta, Vol. 17, J. R. Peak & Son; third, Florence, Vol. 17, J. R. Peak & Son.

GIG HORSES.

EXHIBITORS.

R. Bonde, Story City, Iowa; H. C. Davis, Ames, Iowa; T. C. Evans, Kansas City, Mo.; L. E. Gooding, Des Moines, Iowa; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Horses Not Exceeding 15-2—First, Advance Guard, O. J. Mooers; second, The Lavender Lady, O. J. Mooers; third, Tommy Doyle, J. R. Peak & Son.

Horses Over 15-2—First, Red King, T. C. Evans; second, Red Frances 39716, J. R. Peak & Son

TANDEMS.

EXHIBITORS.

R. Bonde, Story City, Iowa; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Tandem Team—First, The Lavender Lady and Advance Guard; second, Tommy Doyle and Red Frances, J. R. Peak & Son.

SADDLE HORSES.

EXHIBITORS.

Buckman Bros., Monroe City, Mo.; Thos. Bass, Mexico, Mo., C. J. Buchanan, Indianapolis, Ind.; Ed Clapper, Unionville, Mo.; T. C. Evans, Kansas City, Mo.; S. J. Gabbert, Dearborn, Mo.; E. P. Hall, Mechanicsburg, Ill.; Ralph Hamilton, Keota, Iowa; Chas. C. Judy, Tallula, Ill.; O. J. Mooers, Columbia, Mo.; C. E. Monahan, Des Moines, Iowa; Geo. H. Paul, Washington, Iowa; Chas. H. Stockdale, Des Moines, Iowa; C. C. VanMeter, Sherman, Ill.

AWARDS.

JUDGE ....R. E. JONES, Webster City, Iowa.

Gelding Four Years Old or Over—Jack O'Diamond, Thos. Bass; second, Aldelia, Thos. Bass; third, Red King, T. C. Evans; fourth, Orange, Thos. Bass; fifth, The Mayor, C. C. VanMeter.

Gelding Three Years Old and Under Four—First, Ike, Thos. Bass; second, King Robert, Chas. H. Stockdale.

Stallion Four Years Old or Over—First, Mack Donald, Thos. Bass; second, Rex Chief A., Thos. Bass; third, Alexander Jester 1979, Chas. C. Judy; fourth, Rex Yolo 2495, Chas. H. Stockdale; fifth, Boyle Chief, T. C. Evans.

Stallion Three Years Old and Under Four—First, Marshall Chief, Thos. Bass; second, Graham McDonald, Thos. Bass.

Mare Four Years Old or Over—First, Lady Vanity, O. J. Mooers; second, Callaway Belle, Geo. H. Paul; third, Regina Denmark, Thos. Bass; fourth, Cynthia, Chas. C. Judy; fifth, Mollie McDonald, 3304, Chas. H. Stockdale.

Mare Three Years Old and Under Four—First, Frances McDonald, Thos. Bass; second, Rose, Thos. Bass; third, Grace P., Chas. C. Judy; fourth, Matilda, O. J. Mooers.

Champion Stallion, Mare or Gelding—First, Jack O'Diamond, Thos. Bass; second, Mack McDonald, Thos. Bass; third, Lady Vanity, O. J. Mooers.

Grand Display, Best Five Animals Owned by Exhibitor—Thos. Bass.

WALK, TROT AND CANTER.

Stallion, Mare or Gelding, Any Age—First, Lady Vanity, O. J. Mooers; second, Orange, Thos. Bass; third, The Sheriff, C. C. VanMeter; fourth, Mack McDonald, Thos. Bass; fifth, Louis A., Thos. Bass.

COMBINED HARNESS AND GAITED SADDLE HORSES.

Stallion, Mare or Gelding, Any Age—First, Jack O'Diamond, Thos. Bass; second, Lady Vanity, O. J. Mooers; third, Orange, Thos. Bass; fourth ————, Chas. C. Judy.

HIGH SCHOOL HORSES.

Stallion, Mare or Gelding—First, Louis A., Thos. Bass; second, The Sheriff, C. C. VanMeter; third, Orange, Thos. Bass.

SPECIAL PRIZES OFFERED BY THE AMERICAN SADDLE HORSE BREEDERS' ASSN.

Stallion or Mare, over Three Years Old, to be Shown to Saddle in Five Gates—First, Calloway Belle, Geo. H. Paul.

Stallion or Mare, Three Years Old or Under, to be Shown to Hand—First, Rex Dean, Ralph Hamilton.

SHETLAND PONIES.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; Chas. Bachman, Des Moines, Iowa; Cassidy & Thompson, Jamaica, Iowa; H. C. Davis, Ames, Iowa; John Donhowe, Story City, Iowa; Hunkydory Farm, Pella, Iowa; H. W. Littleton, Harlan, Iowa; Warren McDonald, Ames, Iowa; Chas. Parmenter, Des Moines, Iowa; W. T. Roberts & Son, Ames, Iowa; G. H. Simpson, Wheaton, Ill.; Adam Sterling, Des Moines, Iowa; J. A. Ward, Gilman, Iowa; W. W. Waltmire, Peculiar, Mo.; D. G. Welty, Nevada, Iowa.

AWARDS.

JUDGE ....PROF. JOHN A. CRAIG, San Antonio, Tex.

Stallion Three Years Old and Over—First, Imp. Jolly Winkle, Geo. H. Simpson; second, Anton 4342, John Donhowe; third, Brigadier 8845, Adam Sterling; fourth, Taaggum 6744, Cassidy & Thompson.

Stallion Two Years Old and Under—First, Dermot 7700, John Donhowe; second, Dunmare 7710, John Donhowe; third, Snowdrop Prince 7983, Geo. H. Simpson; fourth, Dictator 7772, John Donhowe.

Stallion or Mare Foal—First, ———, Cassidy & Thompson; second, Dennie, John Donhowe; third, ———, H. W. Littleton; fourth, Deva, John Donhowe.

Mare Three Years Old or Over—First, Imp. Nellie, Geo. H. Simpson; second, Cherry VI, Imp., Geo. H. Simpson; third, Pansy H. 60676, Geo. H. Simpson; fourth, Lady 2d, Chas. Parmenter.

Mare Two Years Old and Under Three—First, Bell Girl, John Donhowe, second, Biddy 8840, Adam Sterling; third, Sapphire 7989, Geo. H. Simpson; fourth, Fay 7067, W. T. Roberts & Son.

Shetland Pony in Harness—First, Imp. Nellie, Geo. H. Simpson; second, Lillian D., 8121, John Donhowe; third, Anton, 4342, John Donhowe; fourth, Pansy H., Geo. H. Simpson.

Pair Shetland Ponies in Harness—First, Imp. Cherry VI and Mate, Geo. H. Simpson; second, Anton and Dunmare, John Donhowe; third, Lillian D. and Dab D., John Donhowe; fourth, ———, Adam Sterling.

Four-in-Hand Shetlands—First, Irving and Mate, Cherry VI and Mate, Geo. H. Simpson; second, Anton and Dunmare, Lillian D. and Dab D., John Donhowe; third, Aldine and Trixy, Gladys and Tedys, H. C. Davis; fourth, Dolly and Bronte, Becky Sharp and Beith.

Tandem Team of Shetlands—First, Imp. Cherry VI and Mate, Geo. H. Simpson; second, Imp. Black David and Mate, Geo. H. Simpson; third, Anton and Dunmare, John Donhowe; fourth, Lightning and Jester, W. T. Roberts & Sons.

Shetland Pony Under Saddle—First, Lady 2d, Chas. Parmenter; second, Imp. Jolly Winkle, Geo. H. Simpson; third, Irving, Geo. H. Simpson; fourth, Tedys, John Donhowe.

Shetland Stallion and Four of His Get—First, ———, John Donhowe; second, ———, Cassidy & Thompson; third, W. T. Roberts & Son; fourth, ———, H. C. Davis.

Grand Display; Best Five Animals Bred by Exhibitor—First, ———, John Donhowe; second, ———, Geo. H. Simpson; third, ———, W. T. Roberts & Son; fourth, ———, H. C. Davis.

PONIES OTHER THAN SHETLAND.

EXHIBITORS.

H. C. Davis, Ames, Iowa; John Donhowe, Story City, Iowa; T. J. Lee, Mitchellville, Iowa; Warren McDonald, Ames, Iowa; Robert Palmer, Decatur, Iowa; J. R. Peak & Son, Winchester, Ill; D. G. Welty, Nevada, Iowa.

AWARDS.

JUDGE ....PROF. JOHN A. CRAIG, San Antonio, Tex.

Pony in Harness—First, Daisy, Warren McDonald; second, Lady of the Lake, John Donhowe; third, Juliett, Warren McDonald.

Pair of Ponies in Harness—First, Juliett and Daisy, Warren McDonald; second, ————, D. G. Velty.

Pony Under Saddle—First, Buster, T. J. Lee; second, Daisy, Warren McDonald; third, Lady of the Lake, John Donhowe.

MORGANS.

EXHIBITORS.

Chas. T. Ayres, Osceola, Iowa; Geo. Bacon, Amboy, Ill; Dewey & Langley, Amboy, Ill.; S. B. Mills, Ames, Iowa; O. J. Mooers, Columbia, Mo.; Morgan Horse Farm, Plainfield, Iowa; C. E. Mundell, Lucas, Iowa; P. F. Smith, Montezuma, Iowa.

AWARDS.

JUDGE ....GEO. M. ROMMEL, Washington, D. C.

Stallion Three Years Old and Over—First, Morgan Panic 5003, P. F. Smith.

Stallion Two Years Old and Under Three—First, Admiral George Dewey, Dewey & Langley.

Stallion One Year Old and Under Two—First, Rear Admiral, Dewey & Langley; second, Captain De Jamette 5805, Dewey & Langley; third, Tim Morgan 5606, P. F. Smith.

Horse or Mare Foal—First, Dot, S. F. Mills; second, Knox All, P. F. Smith; third, Queen of All, P. F. Smith.

Mare Three Years Old or Over—First, Nettie, S. B. Mills; second, Nellie, S. B. Mills; third, Twilight, Dewey & Langley.

Filly Two Years Old and Under Three—First, ————, second; Tessie Hudson, Vol. 3, Morgan Horse Farm; third, Daylight Special, Dewey & Langley.

Filly One Year Old and Under Two—First, Belle of Amboy, Dewey & Langley; second, Pearl Morgan, S. B. Mills; third, Merl Morgan, S. B. Mills.

Get of Stallion—First, ————, P. F. Smith; second, ————, Dewey & Langley; third, ————, Morgan Horse Farm.

Grand Display: Best Five Animals Bred by Exhibitor—First, ————, S. B. Mills; second, P. F. Smith; third, Dewey & Langley.

HACKNEY.

EXHIBITORS.

Crawford & Griffin, Newton, Iowa; Wm. Crownover, Hudson, Iowa; J. Crouch & Son, LaFayette, Ind.; John Leitch, LaFayette, Ill.; John G. Tait, Ames, Iowa; Trumans' Pioneer Stud Farm, Bushnell, Ill.

AWARDS.

JUDGE....................ALEXANDER GALBRAITH, DeKalb, Ill.

Stallion Four Years Old and Over—First, Kingsland Raincliff 1071 (8213), Trumans' Pioneer Stud Farm; second, Tholla Fashion, 10456, J. Crouch & Son; third, Neptune 632 (7940), Crawford & Griffin.

Stallion Over Three Years and Under Four—First, Heacham Noble Shot 1146 (10537), Trumans' Pioneer Stud Farm; second, Terrington Warrior 10454, John Leitch; third, Tollington 1133 (10464), Trumans' Pioneer Stud Farm.

Stallion Over Two Years and Under Three—First, Don Enielio 10896, J. Crouch & Son; second, Pockington Protector 10894, J. Crouch & Son; third, Terrington Warlock 10828, John Leitch.

Mare Over Four Years Old—First, Queen of Diamonds 1898 (17665), Trumans' Pioneer Stud Farm.

Mare Over Three Years and Under Four—First, Ardimersay Lottery, 19703, John G. Tait; second, Fair Clisa, 19061, John G. Tait.

Produce of Mare—First, ———, John Leitch.

Grand Display; Best Five Animals Owned by Exhibitor—First, ———, Trumans' Pioneer Stud Farm.

SPECIAL PRIZES OFFERED BY THE AMERICAN HACKNEY HORSE SOCIETY.

Best Stallion Not Under 14-2—Prickwillow Connaught 1016 (7573), Trumans' Pioneer Stud Farm.

Best Mare Not Under 14-2—Queen of Diamonds 1898 (17665), Trumans' Pioneer Stud Farm.

SPECIAL PRIZES OFFERED BY THE ENGLISH HACKNEY HORSE SOCIETY.

Best Hackney Stallion—Prickwillow Connaught 1016 (7573) Trumans' Pioneer Stud Farm.

Best Hackney Mare—Queen of Diamonds 1898 (17665), Trumans' Pioneer Stud Farm.

FRENCH AND GERMAN COACH.

EXHIBITORS.

J. Crouch & Son, LaFayette, Ind.

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Stallion Four Years Old and Over—First, Mohikaner 4735, J. Crouch & Son; second, Minno 3577, J. Crouch & Son; third, Ebolo 4007, J. Crouch & Son.

Stallion Over Three Years and Under Four—First, Amber 1106, J. Crouch & Son; second, Patron 1929, J. Crouch & Son.

Stallion Over Two Years Old and Under Three—First, Taimes 3407, J. Crouch & Son.

Mare Over Four Years Old—First, Elektra 384, J. Crouch & Son.

Best Five Animals Owned by Exhibitor—First, J. Crouch & Son.

CLYDESDALE.

EXHIBITORS.

Andrew Crawford, Lone Tree, Iowa; W. V. Hixson, Marengo, Iowa; John Leitch, LaFayette, Illinois; McLay Brothers, Janesville, Wisconsin; James Pedley, Algona, Iowa; Savage Brothers, Ft. Dodge, Iowa; A. G. Soderberg, Osco, Illinois; John G. Tait, Ames, Iowa.

AWARDS.

JUDGE ....ROBT. MILLER, Stouffville, Ont.

Stallion Four Years Old and Over—First, Baron Clifton 12611 (13252), W. V. Hixson; second, Ben Lamond, 12853, John Leitch; third, Sis Joseph 13264, John Leitch; fourth, Knockpatel 12053, John Leitch; fifth, Young Sir David, 14432, John G. Tait.

Stallion Over Three and Under Four—First, Prince of White House 13027, John Leitch; second, Spring Hill Marquis, 14391, John Leitch; third, Adnistan 14897, John Leitch; fourth, Advocate 13951, John Leitch.

Stallion Over Two and Under Three—First, Scot Laddie 13562, W. V. Hixson; second, Kildavanan, 14721, John Leitch; third, Stalwart, 13563, W. V. Hixson; fourth, Bassanio, 14460, John G. Tait; fifth, King Charming 13517, James Pedley.

Stallion Over One and Under Two—First, Forest King 14076, James Pedley; second, Baron Delightful 14181, W. V. Hixson.

Horse Foal—First, Baron Lynedoch, W. V. Hixson; second, Chief Ambassador, Savage Brothers; third, Alexander, Savage Brothers.

Stallion Over Three Years Old Bred by Exhibitor—First, Prince of White House 13027, John Leitch.

Stallion Under Three Years Old, Bred by Exhibitor—First, Scot Laddie 13562, W. V. Hixson; second, Forest King 14076, James Pedley; third, Baron Delightful 14181, W. V. Hixson; fourth, Baron Lynedoch, W. V. Hixson; fifth, Stalwart, 13563, W. V. Hixson.

Mare Over Four Years Old—First, Pride of Drumlanrig 22010, John Leitch, second, Strathendrick Jean 12605, W. V. Hixson; third, Palmerston's Darling 12332, W. V. Hixson.

Filly Over Three and Under Four—First, Lady Madison 22013, John Leitch; second, Lady Vanity, 22011, John Leitch; third, Doll 22014, John Leitch.

Filly Over Two and Under Three—First, Lady Palmerston, 13565, W. V. Hixson; second, Malinda 14289, John Leitch.

Filly Over One and Under Two—First, Princess Clifton 14183, W. V. Hixson.

Mare Foal—First, Pride of Avandale, John Leitch; second, Clifton Darling, W. V. Hixson.

Mare Over Three Years Old Bred by Exhibitor—First, Palmerston's Darling 12332, W. V. Hixson.

Mare Under Three Years Old Bred by Exhibitor—First, Lady Palmerston, 13565, W. V. Hixson; second, Clifton's Darling, W. V. Hixson; third, Princess Clifton 14183, W. V. Hixson.

Champion Stallion—First, Scot Laddie 13562, W. V. Hixson; second, Palmerston's Darling 12332, W. V. Hixson.

Champion Mare—First, Pride of Drumlanrig 22010, John Leitch; second, Lady Madison 22013, John Leitch.

Get of Stallion—First, ————, W. V. Hixson; second, ————, W. V. Hixson.

Produce of Mare—First, ————, W. V. Hixson; second, ————, James Pedley.

Grand Display—First, ————, W. V. Hixson; second, ————, W. V. Hixson.

SPECIAL PRIZES OFFERED BY THE AMERICAN CLYDESDALE ASSOCIATION.

Stallion Three Years Old and Over—First, Baron Clifton 12611 (13252), W. V. Hixson; second Prince of White House 13027, John Leitch; third, Spring Hill Marquis 14391, John Leitch.

Mare Three Years Old and Over—First, Pride of Drumlanrig 22010, John Leitch; second, Lady Madison 22013, John Leitch; third, Doll 22014, John Leitch.

ENGLISH SHIRE.

EXHIBITORS.

F. Berky & Son, Ankeny, Iowa; Robt. Burgess & Son, Wenona, Ill.; J. Crouch & Son, LaFayette, Ind.; Wm. Crownover, Hudson, Iowa; C. Dullard, Colfax, Iowa; Finch Bros., Joliet, Ill.; W. H. Grigsby & Son, Madrid, Iowa; Peter Hopley & Son, Lewis, Iowa; J. A. Sage, Ankeny, Iowa; Shaw Bros., Mitchellville, Iowa; A. G. Soderberg, Osco, Ill.; Trumans' Pioneer Stud Farm, Bushnell, Ill.; Union Wrecking Company, Des Moines, Iowa; C. L. Waltz, Spaulding, Iowa.

AWARDS.

JUDGE ....R. B. OGILVIE, Chicago, Ill.

Stallion Four Years Old and Over—Dan Patch (25815), Trumans' Pioneer Stud Farm; second, Wellbrook Albert (24749), Trumans' Pioneer Stud Farm; third, Industry 10421 (25301), Trumans' Pioneer Stud Farm; fourth, Palterton Honest Tom 10416 (24514), Trumans' Pioneer Stud Farm; fifth, Bury Frian 10373 (24100), Trumans' Pioneer Stud Farm.

Stallion Over Three Years and Under Four—First, Cockerington Tug of War 10380 (26021), Trumans' Pioneer Stud Farm; second, Blue Boy II 10462 (25943), Trumans' Pioneer Stud Farm; third, Moulton Gold 9823 (25251), Robt. Burgess & Son; fourth, Bilsly Charmer 10040 (24938), Trumans' Pioneer Stud Farm; fifth, Hoeker Bellman 10041 (25288), Trumans' Pioneer Stud Farm.

Stallion Over Two Years and Under Three—First, Littleworth Marmion, 10463 (26384), Trumans' Pioneer Stud Farm: second, Wrydelands Chief 9862 (25824), Trumans' Pioneer Stud Farm: third, Merchants Bramhope 10173, Union Wrecking Co.: fourth. Moulton Edward 25809, Finch Bros., Joliet, Ill.

Stallion Over One Year and Under Two—First, Williams Moulton Temple 10362, Trumans' Pioneer Stud Farm; second, Teddy Loyal 10604, F. Berkey & Son; third, Joliet Bend 10081, Finch Bros.; fourth, Young Albert 10577, Finch Bros.

Stallion Foal—First, Majestic 10579, Finch Bros.; second, Inventer, 10578, Finch Bros.

Stallion Over Three Years Old Bred by Exhibitor—First, ————, Finch Bros.; second, ————, J. A. Sage.

Stallion Under Three Years Old Bred by Exhibitor—First, Williams Moulton Temple 10362, Trumans' Pioneer Stud Farm; second, Merchants Bramhope 10173, Union Wrecking Company; third, Teddy Loyal 10604, F. Berkey & Son; fourth, ————, Finch Bros.

Mare Over Four Years Old—First, Wrydelands Sunshine 10110 (40658), Trumans' Pioneer Stud Farm; second, Prospect Gloming 49094, Finch Bros.; third, Verona Pearl, 6082, Finch Bros.; fourth, Queen of Hearts, 6384, F. Berkey & Son; fifth, Ankeny Bell 8199, J. A. Sage.

Filly Over Three Years and Under Four—First, Eastrea Princess 10048 (55874), C. L. Waltz; second, Boro Daisy, 10047 (53196), C. L. Waltz; third, Fashion Plate 8771, J. A. Sage; fourth, Moulton Rosebud 55858, Finch Bros.

Filly Over Two Years and Under Three—First, Merchants Duchess 10630, Union Wrecking Company; second, Ankeny Flora 10528, J. A. Sage; third, Verona Lilly 9585, Finch Bros.

Filly Over One Year and Under Two—First, Black Maid 10214, Finch Bros.; second, Ankeny Starlight 10529, J. A. Sage; third, Finches Glory 9761, C. Dullard.

Mare Foal—First, ————, J. A. Sage.

Mare Over Three Years Bred by Exhibitor—First, ———, Finch Bros.; second, Fashion Plate 8771, J. A. Sage.

Mare Under Three Years Bred by Exhibitor—First, Ankeny Flora 10528, J. A. Sage; second, ————, Finch Bros.; third, Ankeny Starlight 10529, J. A. Sage.

Champion Stallion—Dan Patch (25815), Trumans' Pioneer Stud Farm.

Champion Mare—Wrydelands Sunshine 10110 (40658), Trumans' Pioneer Stud Farm.

Get of Stallion—First, ————, J. A. Sage; second, ————, Finch Bros.

Produce of Mare—First, ————, J. A. Sage; second, ————, Finch Bros.; third, Finch Bros.

Grand Display, Four Animals Bred by Exhibitor—First, J. A. Sage; second, Finch Bros.

SPECIAL PRIZES OFFERED BY THE AMERICAN SHIRE HORSE ASSOCIATION.

Stallion Four Years Old or Over—First, Dan Patch, (25815), Trumans' Pioneer Stud Farm; second, Wellbrook Albert (24749), Trumans' Pioneer Stud Farm; third, Industry 10421 (25301), Trumans' Pioneer Stud Farm; fourth, Palterton Honest Tom 10416 (24514), Trumans' Pioneer Stud Farm; fifth, Bury Frian 10373 (24100), Trumans' Pioneer Stud Farm.

Stallion Three Years Old and Under Four—First, Cockerington Tug of War 10380 (26061), Trumans' Pioneer Stud Farm; second, Blue Boy II 10462 (25943), Trumans' Pioneer Stud Farm; third, Moulton Gold 9823 (25251), Robt. Burgess & Son; fourth Bilsly Charmer, 10040 (24935), Trumans' Pioneer Stud Farm; fifth, Hoeker Bellman, 10041 (25288), Trumans' Pioneer Stud Farm.

Stallion Two Years Old and Under Three, American Bred—First, Merchants Bramhope 10173, Union Wrecking Company.

Stallion One Year Old and Under Two, American Bred -First Williams Moulton Temple 10362, Trumans' Pioneer Stud Farm; second, Teddy Loyal 10604, F. Berky & Son; third, Joliet Bend 10081, Finch Bros.; fourth, Young Albert 10577, Finch Bros.

Stallion Colt Under One Year, American Bred—First, Majestic 10579, Finch Bros.; second, Inventor 10578, Finch Bros.

Mare Four Years Old or Over—First, Wrydelands Sunshine 10110 (40658), Trumans' Pioneer Stud Farm; second, Prospect Gloming 49094, Finch Bros.; third, Verona Pearl 6082, Finch Bros.; fourth, Queen of Hearts 6384, F. Berkey & Son; fifth, Ankeny Bell 8199, J. A. Sage.

Mare Three Years Old and Under Four—First, Eastrea Princess 10048 (55874), C. L. Waltz; second, Boro Daisy 10047 (53196), C. L. Waltz; third, Fashion Plate 8771, J. A. Sage; fourth, Moulton Rosebud 55858, Finch Bros.

Mare Two Years Old and Under Three, American Bred—First, Merchants Duchess 10630, Union Wrecking Company; second, Ankeny Flora 10528, J. A. Sage; third Verona Lilly 9585, Finch Bros.

Mare One Year Old and Under Two, American Bred—First, Black Maid 10214, Finch Bros.; second, Ankeny Starlight 10529, J. A. Sage; third, Finches Glory 9761, C. Dullard.

Mare Colt Under One Year, American Bred—First, ———, J. A. Sage.

Champion Stallion—Dan Patch (25815), Trumans' Pioneer Stud Farm.

Champion Mare—Wrydelands Sunshine 10110 (40658), Trumans' Pioneer Stud Farm.

SPECIAL PRIZE OFFERED BY THE SHIRE HORSE SOCIETY OF ENGLAND.

Best Stallion—Trumans' Pioneer Stud Farm.

PERCHERON AND FRENCH DRAFT.

EXHIBITORS.

F. Berkey & Son, Ankeny, Iowa; Robt. Burgess & Son, Wenona, Ill.; Crawford & Griffin, Newton, Iowa; J. Crouch & Son, LaFayette, Ind.; Wm. Crownover, Hudson, Iowa; W. D. DeClow, Cedar Rapids, Iowa; C. D. Fausch, Slater, Iowa; Finch Bros., Joliet, Ill.; S. B. Frey, Ames, Iowa; C. G. Good, Ogden, Iowa; J. O. Gring, Dallas Center, Iowa; J. M. Gross, Waukee, Iowa; Peter Hopley & Son, Lewis, Iowa; Chas. Irvine, Ankeny, Iowa; C. O. Keiser, Keota, Iowa; J. A. Loughridge, Delta, Iowa; Wm. Mason, Carlisle, Iowa; Maasdam & Wheeler, Fairfield, Iowa; H. G. McMillan & Son, Rock Rapids, Iowa; M. J. Nelson, Cambridge, Iowa; J. C. Stewart, Monmouth, Ill.; Trumans' Pioneer Stud Farm, Bushnell, Ill.; Union Wrecking Company, Des Moines, Iowa; A. M. VanSteenberg, Ogden, Iowa.

AWARDS.

JUDGE ....W. J. KENNEDY, Ames, Iowa.

Stallion Four Years Old or Over—First, Carnot 66666, J. Crouch & Son; second, Cartilage 44189 (58302), H. G. McMillan & Son; third, Bijou 52421 (65856), Robt. Burgess & Son; fourth, Meritant 65126, J. Crouch & Son; fifth, Sultan 68896, J. Crouch & Son.

Stallion Over Three Years and Under Four—First, Gafannus 57527 (70491), Robt. Burgess & Son; second, Gabon 73285, J. Crouch & Son; third, Gateau 69696, Maasdam & Wheeler; fourth, Gautret 55151 (71281), S. B. Frey; fifth, Grenadier 70927, J. Crouch & Son.

Stallion Over Two Years and Under Three—First, Halicte (76422), Robt. Burgess & Son; second, Henner (75667), Robt. Burgess & Son; third, Houblon (74081), Robt. Burgess & Son; fourth, Hector 77135, Maasdam & Wheeler; fifth, Hoche 60339 (74699), Robt. Burgess & Son.

Stallion Over One Year and Under Two—First, Ismael (80707), Robt. Burgess & Son; second, Duke, Finch Bros., Joliet, Ill.; third, Ivory (81151), Robt. Burgess & Son.

Stallion Foal—First, ————, Crawford & Griffin; second, Rowdy, J. M. Gross; third, ————, Union Wrecking Company.

Stallion Over Three Years, Bred by Exhibitor—First, ————, Finch Bros.; second, Charlemagne 45556, H. G. McMillan & Sons; third, Lazelle, 51321, H. G. McMillan & Sons; fourth, Agricola 51280, H. G. McMillan & Sons.

Stallion Under Three Years Old Bred by Exhibitor—First, ————, Finch Bros.; second, Prospect 61080, H. G. McMillan & Sons; third, Rusie 61088, H. G. McMillan & Sons; fourth, Chicard 60110, Maasdam & Wheeler.

Mare Over Four Years Old—First, Castille 43918 (61058), Robt. Burgess & Son; second, Strawberry 41773, Robt. Burgess & Son; third, Flinch 34977, H. G. McMillan & Sons; fourth, Lucy 34974, H. G. McMillan & Sons.

Filly Over Three Years and Under Four—First, Gauloise 75176, J. Crouch & Son; second, Annette 61164, H. G. McMillan & Sons; third, Gripette (71035), Robt. Burgess & Son.

Filly Over Two Years and Under Three—First, Historette (74358), Robt. Burgess & Son; second, Isabel 60783, H. G. McMillan & Sons; third, Mynette 61165, H. G. McMillan & Sons.

Filly Over One Year and Under Two—First, Tilly 61265, Robt. Burgess & Son; second, Eula 60791, H. G. McMillan & Sons; third, Cerise 60788, H. G. McMillan & Sons.

Mare Foal—First, ———, Union Wrecking Company.

Mare Over Three Years Old, Bred by Exhibitor—First, Annette 61164, H. G. McMillan & Sons; second, Charlotta 60781, H. G. McMillan & Sons; third, Camille 60782, H. G. McMillan & Sons; fourth, Bertha 61268, Robt. Burgess & Son.

Mare Under Three Years Old Bred by Exhibitor—First, Isabel 60784, H. G. McMillan & Sons; second Tilly 61265, Robt. Burgess & Son; third, Mynette 61165, H. G. McMillan & Sons; fourth, Ethiope, 59570, Robt. Burgess & Son.

Champion Stallion—First, Gaffrannus 57527 (70491), Robt. Burgess & Son; second, Carnot 66666, J. Crouch & Sons.

Champion Mare—First, Castille 43918 (61058), Robt. Burgess & Son.

Get of Stallion—First, ———, H. G. McMillan & Sons; second, ———, Maasdam & Wheeler.

Produce of Mare—First, ———, H. G. McMillan & Sons; second, ———, H. G. McMillan & Sons; third, Maasdam & Wheeler.

Grand Display, Four Animals Bred by Exhibitor—First, ———, H. G. McMillan; second, ———, Maasdam & Wheeler; third, ———, Robt. Burgess & Son.

SPECIAL PRIZES OFFERED BY THE PERCHERON SOCIETY OF AMERICA.

Best American Bred Stallion, Any Age—First, Duke, Finch Bros.; second, Royal Victor 42182, M. J. Nelson.

Best American Bred Mare, Any Age—First, Strawberry 41773, Robt. Burgess & Son; second, Marie 45560, Finch Bros.

Champion Stallion—First, Gafrannus 57257 (70491), Robt. Burgess & Son; second, Carnot 66666, J. Crouch & Son.

Champion Mare—First, Annette 61164, H. G. McMillan & Sons; second, Castille 43918 (61058), Robt. Burgess & Son.

Best Five Stallions—First, ———, Robt. Burgess & Son; second, J. Crouch & Son.

Best Three Mares—First, ———, Robt. Burgess & Son; second, ———, H. G. McMillan & Sons.

Best Five American Bred Stallions—First, ———, Finch Bros.; second, ———, H. G. McMillan & Sons.

Best Three American Bred Mares—First, ———, H. G. McMillan & Sons; second, H. G. McMillan & Sons.

Best Stud (Stallion and Four Mares) Owned by Exhibitor—First, ———, Robt. Burgess & Son; second, ———, H. G. McMillan & Sons.

Best Stud (Stallion and Four Mares) Bred and Owned by Exhibitor—First, ———, H. G. McMillan & Sons.

Get of Sire—First, H. G. McMillan & Sons; second, Robt. Burgess & Son.

Produce of Mare—First, ————, H. G. McMillan & Sons; second, ————, H. G. McMillan & Sons.

Best Stallion, Any Age, Bred and Owned by Exhibitor—First, Duke, Finch Bros.; second, Charlemagne 45556, H. G. McMillan & Sons.

Best Mare, Any Age, Bred and Owned by Exhibitor—First, Anette 61164, H. G. McMillan & Sons; second, Strawberry 41773, Robt. Burgess & Son.

SPECIAL PRIZES OFFERED BY THE PERCHERON REGISTRY COMPANY.

Stallion Four Years Old and Over—First, Loualaba 50782 (68247), Crawford & Griffin; second, Accordeur 41764 (64706), Crawford & Griffin.

Champion Stallion—First, Loualaba 50782 (68247), Crawford & Griffin.

BELGIAN.

EXHIBITORS.

Crawford & Griffin, Newton, Iowa; J. Crouch & Son, LaFayette, Ind.; Wm. Crownover, Hudson, Iowa; W. B. Donelson, Ogden, Iowa; Finch Bros., Joliet, Ill.; C. G. Good, Ogden, Iowa; G. W. Grigsby, Madrid, Iowa; C. M. Gross, Waukee, Iowa; Peter Hopley & Son, Lewis, Iowa; Chas. Irvine, Ankeny, Iowa; Henry Lefebure, Fairfax, Iowa; J. A. Loughridge, Delta, Iowa; J. N. B. Miller, Prescott, Iowa; A. M. Van Steenberge, Ogden, Iowa.

AWARDS.

JUDGE .... **R. B. OGILVIE, Chicago, Ill.**

Stallion Four Years Old and Over—First, Richelieu 39934, J. Crouch & Son; second, Charley Boy 3778, Finch Bros.; third, Martin du Hazois, 31862, G. W. Grigsby; fourth, Coquet 2766 (51852), Chas. Irvine; fifth, Gaillard 2763, J. A. Loughridge.

Stallion Over Three and Under Four—First, Hercule d' O 50554, J. Crouch & Son; second, Hercule de Bierghes 51852, J. Crouch & Son; third, Palladium 48452, J. Crouch & Son; fourth, Lamekewzoet (52190), Henry Lefebure; fifth, Tambur 3596, Finch Bros.

Stallion Over Two Years and Under Three—First, Robt. II de Rum 3595 (46686), Chas. Irvine; second, Acme Chief 3898, Finch Bros.; third, Neron 3781, Finch Bros.

Stallion Over One Year and Under Two—First, Whats Wanted 3890, Finch Bros.; second Just In 3895, Finch Bros.; third, Welcome 3942, C. G. Good.

Stallion Foal—First, Major Mellmont, J. M. Gross.

Stallion Over Three Years, Bred by Exhibitor—First, Robt. III 2745, Finch Bros.; second, Joliet 3179, Finch Bros.

Stallion Under Three Years Bred by Exhibitor—First, Whats Wanted 3890, Finch Bros; second, Just In 3895, Finch Bros.; third, Gouye 2979, W. B. Donellson.

Mare Over Four Years Old—First, Margarine 837, J. Crouch & Son; second, Prista 788, Finch Bros.; third, Ninette (Vol. 13), Henry Lefebure; fourth, Grizette 882 (54461), A. M. VanSteenberge.

Filly Over Three Years and Under Four—First, Diane die Kat 653, J. Crouch & Son; second Francaise 761 (61247), Chas. Irvine; third, Cigarette 471, Henry Lefebure.

Filly Over Two Years and Under Three—First, Marquis de Petit Chassort 1221. J. Crouch & Son; second Liza d' Hen (Vol. 16), Henry Lefebure; third, Laura de Langemark 785, Finch Bros.

Filly Over One Year and Under Two—First, Rachel (Vol. 17), Henry Lefebure; second, Lola (Vol. 17), Henry Lefebure; third, Irvine's Sort 967, Chas. Irvine.

Mare Foal—First, ————, Henry Lefebure; second, ————, Chas. Irvine.

Mare Over Three Years Bred by Exhibitor—First, ————, Henry Lefebure.

Mare Under Three Years Bred by Exhibitor—First, ————, Henry Lefebure.

Champion Stallion—First, ————, J. Crouch & Son; second, ————, Finch Bros.

Champion Mare—First, ————, J. Crouch & Son; second, ————, J. Crouch & Son.

Get of Stallion—First, ————, Henry Lefebure.

Produce of Mare—First, ————, Finch Bros.; second, ————, Henry Lefebure.

Grand Display, Best Four Animals Bred by Exhibitor—First, Henry Lefebure; second, Finch Bros.

DRAFT GELDINGS AND MARES.

EXHIBITORS.

John Albaugh, Ankeny, Iowa; Robt. Burgess & Son, Wenona, Ill.; J. Crouch & Son, LaFayette, Ind.; Loren Dunbar, Earlham, Iowa; Finch Bros., Joliet, Ill.; Chas. Irvine, Ankeny, Iowa; C. E. Jones, Madrid, Iowa; James Pedley, Algona, Iowa; A. G. Soderberg, Osco, Ill.; Swift & Co., Chicago, Ill.; C. L. Waltz, Spaulding, Iowa.

Gelding or Mare Four Years or Over—First, Robt. Burgess & Son; second, J. Crouch & Son; third, J. Crouch & Son; fourth, J. Crouch & Son.

Gelding or Mare Three Years and Under Four—First, Finch Bros., second, Chas. Irvine; third, Loren Dunbar; fourth, Loren Dunbar.

Gelding or Mare Two Years and Under Three—First, Chas. Irvine; second, Chas. Irvine; third, John Albaugh; fourth, Chas. Irvine.

Gelding or Mare One Year and Under Two—First, Chas. Irvine; second, John Albaugh; third, Loren Dunbar; fourth, Loren Dunbar.

Draft Team in Harness—First, Swift & Co.; second, J. Crouch & Son; third, Swift & Co.; fourth, Chas. Irvine.

Best Groomed and Harnessed Farmer's Team (Limited to Farmers of Iowa)—First, Chas. Irvine; second, Chas. Irvine; third, Loren Dunbar; fourth, C. L. Waltz.

To Groom Having Fitted First Prize Gelding or Mare—Thos. Bright.

To Groom Having Fitted First Prize Three Year Old Gelding or Mare—Finch Bros.

To Groom Having Fitted First Prize Two Year Old Gelding or Mare—C. C. Irvine.

To Groom Having Fitted First Prize Yearling Gelding or Mare—Chas. Irvine.

To Groom Having Fitted Third Prize Farmer's Team—Chas. Jennings.

To Groom Having Fitted Fourth Prize Farmer's Team—E. R. Waltz.

To Groom Having Fitted Fifth Prize Farmer's Team—Loren Dunbar.

Four Horse Team—Swift & Co.; second, J. Crouch & Son.

Six Horse Team—Swift & Co.; second, J. Crouch & Son.

MULES.

EXHIBITORS.

Loren Dunbar, Earlham, Iowa; H. M. Hall, Stanbury, Mo.; Chas. C. Judy, Tallula, Ill.; T. J. Lee, Mitchellville, Iowa;

AWARDS.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

Mule Four Years or Over—First, H. M. Hall.

Mule Three Years or Under Four—First, Chas. C. Judy.

Mule Two Years and Under Three—First, T. J. Lee; second, Chas. C. Judy; third, T. J. Lee.

Mule One Year and Under Two—First, Chas. C. Judy; second, Chas. C. Judy; third, H. M. Hall.

Mule Colt Under One Year—First, T. J. Lee; second, T. J. Lee.

Mine Mule 15 *Hands or Over*—First, Chas. C. Judy; second, Chas. C. Judy.

Mine Mule 15 *Hands or Under*—First, Chas. C. Judy; second, Chas. C. Judy.

Pair of Mules Over 2,400 *Pounds*—First, H. M. Hall; second, Chas. C. Judy.

Pair of Mine Mules Under 2,400 Pounds—First, Chas. C. Judy; second, Chas. C. Judy.

Pair of Mules Any Age or Weight—First, H. M. Hall; second, Chas. C. Judy.

Five Mules of Any Age—First, Chas. C. Judy; second, T. J. Lee.

Champion Mule, Any Age—First, H. M. Hall; second, Chas. C. Judy.

CATTLE DEPARTMENT.

SUPERINTENDENT ....S. B. PACKARD, Marshalltown, Iowa.

SHORT-HORNS.

EXHIBITORS.

A. Alexander, Morning Sun, Iowa; G. H. Burge, Mt. Vernon, Iowa; Claverburn Stock Co., Colo, Iowa; Davidson Bros., Stanwood, Iowa; C. W. Daws & Son, Harlan, Iowa; W. H. Dunwoody, Minneapolis, Minnesota; F. A. Edwards, Webster City, Iowa; Elmendorf Farm, Lexington, Kentucky; Philip Funke, Greenfield, Iowa; F. W. Harding, Waukesha, Wisconsin; Everett Hayes, Hiawatha, Kansas; Ray Irwin, New Virginia, Iowa; J. T. Judge, Carroll, Iowa; C. L. McClellan, Lowden, Iowa; H. G. McMillan & Sons, Rock Rapids, Iowa; Wm. Meyers, Carroll, Iowa; C. F. Mitchell & Son, Farragut, Iowa; J. R. Peak & Son, Winchester, Illinois; Wm. Penningroth, Tipton, Iowa; C. A. Saunders, Manilla, Iowa; L. C. Shepard, Manning, Iowa; J. F. Stevenson, Hancock, Iowa; C. Struve & Son, Manning, Iowa; J. T. Swearingen & Son, Hedrick, Iowa; D. Tietjen, Bellevue, Iowa; T. K. Tomson, Dover, Kansas; Geo. M. Vader, Churdan, Iowa; R. E. Watts & Son, Miles, Iowa; G. M. White, Emerson, Iowa; J. M. Wolfe, Washington, Iowa; F. M. Zenor, Woolstock, Iowa.

AWARDS.

JUDGE ....CAPTAIN T. E. ROBSON, London, Ont.

Bull Three Years Old or Over—First, Sidelight, F. W. Harding; second, Nonpareil Marquis 304059, W. H. Dunwoody; third, Snowflake 263207, Everett Hayes; fourth, Sentinel 217597, R. E. Watts; fifth, Straight Marshall 247515, D. Tietjen; sixth, Royal Lancaster 261492, C. Struve & Sons.

Bull Two Years Old and Under Three—First, King Cumberland 288383, Elmendorf Farm; second, Gallant Knight Heir 292014, T. K. Tomson & Sons; third, Count Abbott 300501, C. L. McClellan; fourth, Clipper's Choice 285658, W. H. Dunwoody; fifth, Roan Knight 2d 311715, Claverburn Stock Company; sixth, Broadhooks Pride 288955, J. T. Swearengen & Son.

Senior Yearling Bull—First, Red Marshall, F. W. Harding; second, Ringmaster 299782, G. M. Vader, Churdan, Iowa; third, Scottish Goods 301325, C. F. Mitchell & Son; fourth, Royal George, Vol. 73, No. 300586, G. H. Burge; fifth, Royal Butterfly 200171, H. G. McMillan & Sons; sixth, Chieftain 306160, Ray Irwin.

Junior Yearling Bull—First, Elmendorf Marshal, Elmendorf Farm; second, Village Marshall 302358, D. Tietjen; third, Scotchman's Clipper 300412, W. H. Dunwoody; fourth, Thickset 310638, Wm. Penningroth; fifth, Knight of Pinehurst 302133, C. W. Daws & Son; sixth, The Monk, G. H. Burge.

Senior Bull Calf—First, Sultan Adversary, F. W. Harding; second, Regulator, G. H. Burge; third, Snowflake's Model 316807, Everett Hayes: fourth, Gloster's Last 317014, R. E. Watts & Sons; fifth, Victor, Elmendorf Farm; sixth, Scotchman 316696, Wm. Penningroth.

Junior Bull Calf—First, Hamptons King 316734, G. A. White; second, Sultans Leader, F. W. Harding; third, Graefull Marshall, D. Tietjen; fourth, David Copperfield 318966, Davidson Bros.; fifth, Mystic Worker, G. H. Burge; sixth, Acorn Lad 319709, H. G. McMillan.

Cow Three Years Old or Over—First, Sinnissippi Rose 2d, Elmendorf Farm; second, Queenston Bellona 42782. F. A. Edwards; third, Village Belle 3d, Vol. 66, D. Tietjen; fourth, Delightful, Vol 68, T. K. Tompson & Sons; fifth, Grace, Vol. 66, P. 1040, Everett Hayes; sixth, Missie of Browndale 12, F. W. Harding.

Heifer Two Years and Under Three—First, Christmas Lassie 15153, T. K. Tomson; second, Snowbird, F. W. Harding; third, Elmendorf Lassie 15353, Elmendorf Farm; fourth, Berneice 50157, F. A. Edwards; fifth, Village Rose 17811, D. Tietjen; sixth, Princess Margaret 2d 15374, W. H. Dunwoody.

Senior Yearling Heifer—First, Anoka Aconite, F. W. Harding; second, Woodhill Belle 2d 36823, W. H. Dunwoody; third. Vanity 38906, Everett Hayes; fourth, Lady Phillis 2d 36528, H. G. McMillan; fifth, White Butterfly 59141, G. H. White; sixth, Roan Lady 40510, Elmendorf Farm.

Junior Yearling Heifer—First, Miss Marshall 2d 38834, D. Tietjen; second, Sultan F., F. W. Harding; third, Cheerful 7th 36821, W. H. Dunwoody; fourth, Lady Hampton 51856, G. A. White; fifth, Lady Lee 61362, Davidson Brothers; sixth, Highland Princess 59276, C. L. McClellan.

Senior Heifer Calf—First, Marshal's Strathalien, Elmendorf Farm; second, Calceolaria Anoka, F. W. Harding; third, Gloster Anoka, F. W. Harding; fourth, Elmendorf Mary, Elmendorf Farm; fifth, Snowflake's Queen 59239, Everett Hayes; sixth, Pinehurst Queen 58775, C. W. Daws & Son.

Junior Heifer Calf—First, Sultan Countess, F. W. Harding; second, Marshal's Queen, Elmendorf Farm; third, Snowflake's Ruth 59240, Everett Hayes; fourth, New Year's Delight, T. K. Tomson & Sons; fifth, Happy Lass, T. K. Tomson & Sons; sixth, Dandy 62372, Wm. Penningroth.

Exhibitor's Herd—First, Elmendorf Farm; second, F. W. Harding; third, T. K. Tomson & Sons; fourth, D. Tietjen; fifth, Everett Hayes; sixth, F. A. Edwards.

Breeder's Young Herd—First, F. W. Harding; second, W. H. Dunwoody; third, T. K. Tomson & Sons; fourth, G. H. White; fifth, Davidson Brothers; sixth, C. L. McClellan.

Calf Herd—First, F. W. Harding; second, Elmendorf Farm; third, Everett Hayes; fourth, T. K. Tomson & Sons; fifth, G. H. White; sixth, Wm. Penningroth.

Get of Sire—First, F. W. Harding; second, Elmendorf Farm; third, W. H. Dunwoody; fourth, D. Tietjen; fifth, Everett Hayes; sixth, T. K. Tomson & Sons.

Produce of Cow—First, F. W. Harding; second, Elmendorf Farm; third, D. Tietjen; fourth, D. Tietjen; fifth, W. H. Dunwoody; sixth, Everett Hayes.

Senior Champion Bull—Count Abbott 300501, C. L. McClellan.

Junior Champion Bull—Thickset 310638, Wm. Penningroth.

Senior Champion Cow—Berneice 50157, F. A. Edwards.

Junior Champion Heifer—Lady Hampton 51856, G. A. White.

Grand Champion Bull—Thickset 310368, Wm. Penningroth.

Grand Champion Cow—Berneice 50157, F. A. Edwards.

ASSOCIATION SPECIALS, IOWA CATTLE.

Bull Three Years Old or Over—First, Sentinel 217597, R. E. Watts & Sons; second, Straight Marshall 247519, D. Tietjen; third, Royal Lancaster 261492, C. Struve & Sons; fourth, The Dreamer 283208, G. H. White; fifth, City Marshall 270020, F. A. Edwards.

Bull Two Years Old and Under Three—First, Count Abbott 300501, C. L. McClellan; second, Roan Knight 2d 311715, Claverburn Stock Company; third, Golden Chief 300203, A. Alexander; fourth, Proud Lad 283723, G. H. White; fifth, Pineherst Champion 285286, J. F. Stevenson.

Senior Yearling Bull—First, Ringmaster 299782, G. M. Vader; second, Scottish Goods 301325, C. F. Mitchell & Son; third, Royal George, Vol. 73, No. 300586, G. H. Burge; fourth, Royal Butterfly 300171, H. G. McMillan & Sons; fifth, Chieftain 306160, Ray Irwin.

Junior Yearling Bull—First, Village Marshall 302358, D. Tietjen; second, Thickset 310638, Wm. Penningroth; third, Knight of Pinehurst 302133, C. W. Daws & Son; fourth, The Monk, G. H. Burge; fifth, Roan Ringmaster 318967, Davidson Bros.

Senior Bull Calf—First, Regulator, G. H. White; second, Gloster's Last 317014, R. E. Watts & Sons; third, Scotchman 316696, Wm. Penningroth; fourth, King of Fashion 316909, J. T. Judge; fifth, Scottish Victor 316556, C. W. Daws & Son.

Junior Bull Calf—First, Hamptons King 316734, G. A. White, second, Gracefull Marshall, D. Tietjen; third, David Copperfield 318966, Davidson Brothers; fourth, Mystic Worker, G. H. Burge; fifth, Acorn Lad 319709, H. G. McMillan.

Cow Three Years Old or Over—First, Queenston Bellona 42782, F. A. Edwards; second, Village Belle 3d, Vol. 66, D. Tietjen; third, Fenimore Princess (Vol. 60), F. M. Zenor; fourth, Dew Drop 2d 14165, G. A. White; fifth, Lady of the Lake, Wm. Penningroth.

Heifer Two Years and Under Three—First, Berneice 50157, F. A .Edwards; second, Village Rose 17811, D. Tietjen; third, Crimson Belle 18195, D. Tietjen; fourth, Cerimonious Dove 24943, G. W. White; fifth, Algor Daisy 12133, R. E. Watts & Sons.

Senior Yearling Heifer—First, White Butterfly 59141, G. H. White; second, Countess F 38929, F. M. Zenor; third, Claverburn Queen 41766, Claverburn Stock Company; fourth, Juno 24099, Wm. Penningroth; fifth, Sassy Violet 3d 59495, R. E. Watts & Sons.

Junior Yearling Heifer—First, Miss Marshall 2d 38834, D. Tietjen; second, Lady Hampton 51856, G. A. White; third, Lady Lee 61362, Davidson Brothers; fourth, Highland Princess 59276; fifth, Star of the Morning 58804, G. M. Vader.

Senior Heifer Calf—First, Pinehurst Queen 58775, C. W. Daws & Son; second, Mona 4th, 59114, Wm. Penningroth; third, Daisy C. 51855, G. H. White; fourth, Victoria Sharon 6th 58779, C. W. Daws & Son; fifth, Ruth, Claverburn Stock Company.

Junior Heifer Calf—First, Dandy 62372, Wm. Penningroth; second, Dew Drop 3d, G. H. White; third, Ballechin Maid, D. Tietjen; fourth, Pinehurst Pride 58774, C. W. Daws & Son; fifth, Bonnie Lass 60474, Davidson Bros.

Exhibitor's Herd—First, D. Tietjen; second, F. A. Edwards; third, G. H. White; fourth, C. L. McClellan.

Breeder's Young Herd—First, G. H. White; second, Davidson Brothers; third, C. L. McClellan; fourth, C. W. Daws & Son.

Calf Herd—First, G. H. White; second, Wm. Penningroth; third, C. W. Daws & Son; fourth, H. G. McMillan & Sons.

Get of Sire—First, D. Tietjen; second, Wm. Penningroth; third, Davidson Brothers; fourth, G. H. White.

Produce of Cow—First, D. Tietjen; second, D. Tietjen; third, G. H. White; fourth, C. L. McClellan.

Senior Champion Bull—Supereminent 296414, H. G. McMillan.

Junior Champion Bull—Thickset 310638, Wm. Penningroth.

Senior Champion Cow—Berneice 50157, F. A. Edwards.

Junior Champion Cow—Miss Marshall 2d 38834, D. Tietjen.

Grand Champion Bull—Thickset 310638, Wm. Penningroth.

Grand Champion Female—Berneice 50157, F. A. Edwards.

IOWA SPECIALS.

Bull Three Years or Over—First, Sentinel 217597, R. E. Watts & Sons; second, Straight Marshall 247519, D. Tietjen; third, Royal Lancaster 261492, C. Struve & Sons; fourth, The Dreamer 283208, G. H. White; fifth, City Marshall 270020, F. A. Edwards.

Bull Two Years Old and Under Three—First, Count Abbott 300501, C. L. McClellan; second, Roan Knight 2d 311715, Claverburn Stock Company; third, Golden Chief 300203, A. Alexander; fourth, Proud Lad 283723, G. H. White; fifth, Pineherst Champion 285286, J. F. Stevenson.

Senior Yearling Bull—First, Scottish Goods 301325, C. F. Mitchell & Son; second, Royal George Vol. 73, No. 300586, G. H. Burge; third, Royal Butterfly 300171, H. G. McMillan & Sons; fourth, Chieftain 306160, Ray Irwin.

Junior Yearling Bull—First, Thickset 310638, Wm. Penningroth; second, Knight of Pinehurst 302133, C. W. Daws & Son; third, The Monk, G. H. Burge; fourth, Roan Ringmaster 318967, Davidson Brothers; fifth, Bonny Knight 316840, C. L. McClellan.

Senior Bull Calf—First, Gloster's Last 317014, R. E. Watts & Sons; second Scotchman 316696, Wm. Penningroth; third, King of Fashion 316909,

J. T. Judge; fourth, Scottish Victor 316556, C. W. Daws & Son; fifth, Rob Roy 317022, Davidson Bros.

Junior Bull Calf—First, Gracefull Marshall, D. Tietjen; second David Copperfield 318966, Davidson Brothers; third, Mystic Worker, G. H. Burge; fourth, Acorn Lad 319709, H. G. McMillan & Sons; fifth, Young Abbot 316841, C. L. McClellan.

Cow Three Years Old or Over—First, Village Belle 3d, Vol. 66, D. Tietjen; second Fenimore Princess, (Vol. 60), F. M. Zenor; third, Dew Drop 2d, 14165, G. H. White; fourth, Lady of the Lake, Wm. Penningroth; fifth, Village Sultania, Vol. 66, page 973, G. H. White.

Heifer Two Years Old and Under Three—First, Berneice 50157, F. A. Edwards; second, Village Rose 17811, D. Tietjen; third, Crimson Belle 18195, D. Tietjen; fourth, Cerimonious Dove 24943, G. H. White, fifth, Algor Daisy 12133, R. E. Watts & Sons.

Senior Yearling Heifer—First, White Butterfly 59141, G. H. White; second, Countess F., 38929, F. M. Zenor; third, Claverburn Queen 41766, Claverburn Stock Company; fourth, Juno 24099, Wm. Penningroth; fifth, Sassy Violet 3d 59495, R. E. Watts & Son.

Junior Yearling Heifer—First, Lady Hampton 51856, G. H. White; second, Lady Lee 61362, Davidson Brothers; third, Highland Princess 59276, C. L. McClellan; fourth, Star of the Morning 58804, G. M. Vader; fifth, Miss Lavender 59377, Philip Funke.

Senior Heifer Calf—Pinehurst Queen 58775, C. W. Daws & Son; second, Mona 4th 59114, Wm. Penningroth; third, Daisy C. 51855, G. H. White; fourth, Victoria Sharon 6th 58779, C. W. Daws & Son; fifth, Ruth, Claverburn Stock Company.

Junior Heifer Calf—First, Dandy 62372, Wm. Penningroth; second, Dew Drop 3d, G. H. White; third, Ballechin Maid, D. Tietjen; fourth, Pinehurst Pride 58774, C. W. Daws & Son; fifth, Bonnie Lass 60474, Davidson Bros.

Exhibitor's Herd—First, D. Tietjen; second, F. A. Edwards; third, G. H. White; fourth, C. L. McClellan.

Breeder's Young Herd—First, G. H. White; second, Davidson Brothers; third, C. L. McClellan; fourth, C. W. Daws & Son.

Calf Herd—First, G. H. White; second, Wm. Penningroth; third, C. W. Daws & Son; fourth, H G. McMillan & Sons.

Get of Sire—First, D. Tietjen; second, Wm. Penningroth; third, Davidson Brothers; fourth, G. H. White.

Produce of Cow—First, D. Tietjen; second, D. Tietjen; third, G. H. White; fourth, C. L. McClellan.

Senior Champion Bull—Count Abbott 300501, C. L. McClellan.

Junior Champion Bull—Thickset 310638, Wm. Penningroth.

Senior Champion Cow—Berneice 50157, F. A. Edwards.

Junior Champion Cow—Lady Hampton 51856, G. H. White.

Grand Champion Bull—Thickset 310638, Wm. Penningroth.

Grand Champion Cow—Berneice 50157, F. A. Edwards.

HEREFORD.

EXHIBITORS.

Wm. Andrews & Son, Morse, Iowa; J. O. Bryant, Savanna, Missouri; Cargill & Price, LaCrosse, Wisconsin; J. J. Early, Baring, Missouri; S. J. Gabbert, Dearborn, Missouri; O. S. Gibbons & Son, Earlham, Iowa; O. Harris, Harris, Missouri; Makin Brothers, Grandview, Missouri; C. A. Stannard, Emporia, Kansas; Cyrus A. Tow, Norway, Iowa; W. S. Van Natta & Son, Fowler, Indiana; Hugh Whiteford, Guilford, Missouri.

AWARDS.

JUDGE ....THOMAS MORTIMER, Madison, Nebr.

Bull Three Years Old or Over—First, Prince Lad 9th 213963, W. S. Van Natta & Son; second, Governor 249806, J. O. Bryant; third, Dislodger 238024, O. Harris; fourth, Onward 31 187476, O. Harris; fifth, Beau Adventurer 273286, Makin Brothers; sixth, Sunny U. J. 239824, J. J. Early.

Bull Two Years and Under Three—First, Principal 6th 273293, Makin Brothers; second, Curtis 254360, J. O. Bryant; third, Prince Lad 38th 261816, W. S. Van Natta & Son; fourth, Princeps 10th 264203, Cargill & Price; fifth, Princepts 15th 268046, Cargill & Price; sixth, General G. 261924, W. S. Van Natta & Son.

Senior Yearling Bull—First, Repeater 289598, O. Harris; second, Paragon 12th 299116, Makin Brothers; third, Parsifal 3d 324416, Hugh Whiteford; fourth, Beau Mystic 11th 293541, C. A. Stannard; fifth, Parsifal 2d 324415, Hugh Whiteford; sixth, Young Albany 290216, Cyrus A. Tow.

Junior Yearling Bull—First, Bonnie Brae 15th 288353, Cargill & Price; second, Paragon 20th 299119, Makin Brothers; third, Beau Mystic 31st 310428, C. A. Stannard; fourth, Harris Prince 90 307513, O. Harris; fifth, Echo Grove, Wm. Andrews & Son; sixth, Perfection 293655, J. J. Early.

Senior Bull Calf—First, Harris Prince 130th 312352, O. Harris; second, Paragon 21st 324449, Makin Bros.; third, Bonnie Brae 18th 322195, Cargill & Price; fourth, Prince Lad 4th 324662, W. S. VanNatta & Son; fifth, Harris Prince 128th 312350, O. Harris; sixth, Beau Mystic 32d 310429, C. A. Stannard.

Junior Bull Calf—First, Governor 4th 317384, J. O. Bryant; second, Beau Mystic 41st 320062, C. A. Stannard; third, Bonnie Brae 21st 322198, Cargill & Price; fourth, Paragon 25th 324452, Makin Brothers; fifth, Parsifal 16th 324422, Hugh Whiteford; sixth, Parsifal 15th 324514, Hugh Whiteford.

Cow Three Years Old or Over—First, Margaret 234336, W. S. Van Natta & Son; second, Miss Filler 2d 230514, Cargill & Price; third, Harris Princess 5th 231462, O. Harris; fourth, Miss Filler 7th 239660, Cargill & Price; fifth, Garland 228613, O. Harris; sixth, Princeps Lassie 185083, O. S. Gibbons & Son.

Heifer Two Years and Under Three—First, Princess 2d 264207, Cargill & Price; second, Iva 261810, W. S. Van Natta & Son; third, Harris Princess 34th 266426, O. Harris; fourth, Anemone 273285, Makin Brothers; fifth, Princess 7th 267032, Cargill & Price; sixth, Lady Governess 6th 272886, J. O. Bryant.

Senior Yearling Heifer—First, Harris Princess 64th 287286, O. Harris; second, Goodness 299112, Makin Brothers; third, Princess 9th 288919, Cargill & Price; fourth, Princess 13th 288923, Cargill & Price; fifth, Princess 14th 288348; sixth, Miss Duchess 3d 289278.

Junior Yearling Heifer—First, Lady of Grace 3d 299114, Makin Bros.; second, Harris Prince 80 299447, O. Harris; third, Miss Brae 13th 288347, Cargill & Price; fourth, Water Pearl 296954, Cyrus A. Tow; fifth, Adriana 4th 311364, C. A. Stannard; sixth, Nancy 296543, W. S. Van Natta & Son.

Senior Heifer Calf—First, Rosette 324675, W. S. Van Natta & Son; second, Princess 20th 322215, Cargill & Price; third, Goodness 2d 324445, Makin Brothers; fourth, Princess 19th 322212, Cargill & Price; fifth, Cuba 7th 317379, J. O. Bryant; sixth, Mary D. 310457, C. A. Stannard.

Junior Heifer Calf—First, Gladness 324444, Makin Brothers; second, Perfect Lass 324653, W. S. Van Natta & Son; third, Iva 3d 423647, W. S. Van Natta & Son; fourth, Katie Shadeland 3d 317387, J. O. Bryant; fifth, Lady Curtis 317387, J. O. Bryant; sixth, Harris Prince 127 329359, O. Harris.

Exhibitor's Herd—First, W. S. Van Natta & Son; second, O. Harris; third, Cargill & Price; fourth, Makin Brothers; fifth, J. J. Early; sixth, C. A. Stannard.

Breeder's Young Herd—First, O. Harris; second, Makin Brothers; third, Cargill & Price; fourth, W. S. Van Natta & Son; fifth, J. O. Bryant; sixth, C. A. Stannard.

Calf Herd—First, Makin Brothers; second, Cargill & Price; third, J. O. Bryant; fourth, W. S. Van Natta & Son; fifth, C. A. Stannard; sixth, O. Harris.

Get of Sire—First, W. S. Van Natta & Son; second, O. Harris; third, Makin Brothers; fourth, Cargill & Price; fifth, J. O. Bryant; sixth, Cyrus A. Tow.

Produce of Cow—First. Makin Brothers; second, Cargill & Price; third, Cargill & Price; fourth, Makin Brothers; fifth, W. S. Van Natta & Son; sixth, J. O. Bryant.

Senior Champion Bull—Prince Lad 9th 213963, W. S. Van Natta & Son.

Junior Champion Bull—Repeater 289598, O. Harris.

Senior Champion Cow—Margaret 234336, W. S. Van Natta & Son.

Junior Champion Heifer—Harris Princess 64th 287286, O. Harris.

Grand Champion Bull—Prince Lad 9th 213963, W. S. Van Natta & Son.

Grand Champion Cow—Margaret 234336, W. S. Van Natta & Son.

IOWA SPECIALS.

Bull Three Years Old or Over—First, Woodland Chief 22394, Cyrus A. Tow.

Bull Two Years Old and Under Three—First, General G. 261924, O. S. Gibbons & Son; second, Victor 1st 265380, Cyrus A. Tow; third Gomez Perfection 297758, J. N. B. Miller & Sons.

Senior Yearling Bull—First, Young Albany 290216, Cyrus A. Tow.

Junior Yearling Bull—First, Echo Grove 306948, Wm. Andrews & Son; second, March On Jr. 292651, O. S. Gibbons & Son; third, Royal March 304199, O. S. Gibbons & Son.

Senior Bull Calf—First, Norway Chief 315529, Cyrus A. Tow; second, Onward Jr. 308330, O. S. Gibbons & Son.

Cow Three Years Old or Over—First, Princeps Lassie 185083, O. S. Gibbons & Son; second, Emma Nevada 167001, J. N. B. Miller & Sons; third, Edward Lassie 232978, Cyrus A. Tow.

Heifer Two Years Old and Under Three—First, Just Right 263878, Cyrus A. Tow; second, Bright Eyes 266378, O. S. Gibbons & Son; third, Dolly 255218 J. N. B. Miller & Sons; fourth, Mina 264818, J. N. B. Miller & Sons; fifth, Red Ruby 263880, Cyrus A. Tow.

Senior Yearling Heifer—First, Viola 2d 278239, O. S. Gibbons & Son; second, Spray, 289600, Cyrus A. Tow.

Junior Yearling Heifer—First, Water Pearl 296954, Cyrus A. Tow; second, Melba, 288777, Wm. Andrews & Sons; third, Pansy Belle 2d 297762, S. J. Gabbert; fourth, Corona 309145, Wm. Andrews & Sons.

Senior Heifer Calf—First, Jersey Lady 313878, Cyrus A. Tow; second, Lady Winifred 315784, O. S. Gibbons & Son; third, Fairview Pet 303410, Cyrus A. Tow; fourth, Lady Brummel 309147, Wm. Andrews & Son.

Junior Heifer Calf—First, Fairy Queen 315783, O. S. Gibbons & Son; second, Blue Bird 321082, J. N. B. Miller & Sons.

Exhibitor's Herd—First, Cyrus A. Tow; second, O. S. Gibbons & Son; third, J. N. B. Miller & Sons.

Get of Sire—First, Cyrus A. Tow; second, O. S. Gibbons & Son.

Produce of Cow—First, O. S. Gibbons & Son; second, O. S. Gibbons & Son; third, Cyrus A. Tow.

Senior Champion Bull—Woodland Chief 223394, Cyrus A. Tow.

Junior Champion Bull—Echo Grove 306948, Wm. Andrews & Son.

Senior Champion Cow—Princeps Lassie 185083, O. S. Gibbons & Son.

Junior Champion Heifer—Water Pearl 296954, Cyrus A. Tow.

Grand Champion Bull—Echo Grove 306948, Wm. Andrews & Son.

Grand Champion Cow—Princeps Lassie 185083, O. S. Gibbons & Son.

ABERDEEN-ANGUS.

EXHIBITORS.

Louis Aillaud, Newton, Iowa; Otto V. Battles, Maquoketa, Iowa; A. C. Binnie, Alta, Iowa; Otto E. Briney, Central City, Iowa; M. D. Korns, Hartwick, Iowa; J. W. McClung, Indianola, Neb.; W. J. McHenry, Denison, Iowa; W. J. Miller, Newton, Iowa.

AWARDS.

JUDGE ....STANLEY R. PIERCE, Creston, Ill.

Bull Three Years Old or Over—First, Glenfoil Thickset 2d 88142, W. A. McHenry; second, Deceiver 84667, Otto V. Battles; third, Eglamour of Quietdale 82111, W. J. Miller; fourth, Parole 2d 98346, M. D. Korns; fifth, Elmar Lad 84122, A. C. Binnie.

Bull Two Years Old and Under Three—First, Oakville Quiet Lad 109220, Otto V. Battles; second, Peter Sterling 113444, A. C. Binnie; third, Pride of Long-grove 114086, Otto E. Briney.

Senior Yearling Bull—First, Quality Prince 117284, W. A. McHenry; second, Prism 116627, W. A. McHenry; third, Ever Black 117629, Louis Aillaud; fourth, Homedale Kilburn, 117014, W. J. Miller; fifth, Heather Jim of Alta 119955, A. C. Binnie; sixth, King V., 112625, J. W. McClung & Son; seventh, Major Delmar 2d 119956, A. C. Binnie.

Junior Yearling Bull—First, Thickset Blackbird 115895, Otto V. Battles; second, Walnut Dell Eric 122564, M. D. Korns; third, Sir Marcus of Sundance, 121714, J. W. McClung & Son; fourth, Snowflake's King 117396, W. J. Miller; fifth, Long-grove Blackbird Lad 121496, Otto E. Briney; sixth, Proud Elmer Lad 125894, A. C. Binnie.

Senior Bull Calf—First, Sir Duas Pride of Sundance, J. W. McClung & Son; second, Major Delmar 3d, A. C. Binnie.

Junior Bull Calf—First, Cinch 125468, W. A. McHenry; second, Thickset Idol 128967, Otto V. Battles; third, Proud Elmar 2d, A. C. Binnie; fourth, Proud Elmar 3d, A. C. Binnie; fifth, Sir Thicklad of Sundance, J. W. McClung & Son; sixth, Bemura, W. J. Miller.

Cow Three Years Old or Over—First, Queen Lass of Alta 3d 95007, A. C. Binnie; second, Gay Bonnie Lass 100608, Otto V. Battles; third, Abbess McHenry 6th 82418, A. C. Binnie; fourth, Pride McHenry 53d 93305, W. A. McHenry; fifth, Gussie of Kirkbridge 64008, W. J. Miller; sixth, Ethelda D. 95185, W. J. Miller; seventh, Walnut Dell Pearl 85319, M. D. Korns; eighth, ————, W. J. Miller.

Heifer Two Years Old and Under Three—First, Barbara McHenry 24th 104144, W. A. McHenry; second, Blue Grass Ridge Drucilla 99142, Otto V. Battles; third, Queen Milly of Sundance 108658, J. W. McClung; fourth, Snowflake's Queen 2d 106543, W. J. Miller; fifth, Hermosa 8th 110363, A. C. Binnie; sixth, Maplehurst Queen 51st 114811, M. D. Korns; seventh, Baby Queen Cera 109695, A. C. Binnie.

Senior Yearling Heifer—First, Blackbird McHenry 76th 116631, W. A. McHenry; second, Metz Matilda 11th 118619, W. J. Miller; third, Pride McHenry 72d 116635, W. A. McHenry; fourth, Pride Una of Sundance, 118214, J. W. McClung & Son; fifth, Even Lass 118152, A. C. Binnie; sixth, Proud Maggie 119954, A. C. Binnie.

Junior Yearling Heifer—First, Pride McHenry 73d 116642, W. A. McHenry; second, Woodlawn May 117359, M. D. Korns; third, Pride of Alta 10th 118155, A. C. Binnie; fourth, Thickset Lass 115896, Otto V. Battles; fifth, Black Eileen 115897, Otto V. Battles; sixth, Queen Marco of Sundance 121713, J. W. McClung & Son; seventh, Blackbird Lassie of Alta 3d 118154, A. C. Binnie; eighth, Metz Beauty 7th 118746, W. J. Miller.

Senior Heifer Calf—First, Even Lass 2d, A. C. Binnie; second, Pride McHenry 76th 125460, A. C. Binnie; third, Blackbird McHenry 79th 125,-458, W. A. McHenry; fourth, Thickset Pride 128965, Otto V. Battles; fifth, Rosemere Blackbird Lass 128966, Otto V. Battles; sixth, Metz Blackbird 4th 128806, W. J. Miller; seventh, Walnut Grove Tura 126976, M. D. Korns; eighth, Lady May of Sundance, J. W. McClung.

Junior Heifer Calf—First, Eileen of Alta, A. C. Binnie; second, Proud Lass of Alta, A. C. Binnie; third, Pride McHenry 78th 125470, W. A. McHenry; fourth, Walnut Grove Queenette 128220, M. D. Korns; fifth, Thickset Myra 128968, Otto V. Battles; sixth, Pride of Alta 12th, A. C. Binnie; seventh, Pearl Bloom, M. D. Korns; eighth, Metz Matilda 13 128,-807, W. J. Miller.

Exhibitor's Herd—First, W. A. McHenry; second, Otto V. Battles; third, A. C. Binnie; fourth, W. J. Miller; fifth, M. D. Korns; sixth, A. C. Binnie.

Breeder's Young Herd—First, W. A. McHenry; second, Otto V. Battles; third, A. C. Binnie; fourth, W. J. Miller; fifth, J. W. McClung & Son; sixth, A C. Binnie.

Calf Herd—First, A. C. Binnie; second, J. W. McClung & Son; third, Otto V. Battles; fourth, W. J. Miller; fifth, A. C. Binnie

Get of Sire—First, W. A. McHenry; second, A. C. Binnie; third, Otto V. Battles; fourth, W. J. Miller; fifth, J. W. McClung & Son; sixth, A. C. Binnie; seventh, J. W. McClung & Son.

Produce of Cow—First, A. C. Binnie; second, W. A. McHenry; third, Otto V. Battles; fourth, A. C. Binnie; fifth, J. W. McClung & Son; sixth, A. C. Binnie; seventh, J. W. McClung & Son; eighth, W. J. Miller.

Senior Champion Bull—Glenfoil Thickset 2d 88142, W. A. McHenry.

Junior Champion Bull—Quality Prince 117284, W. A. McHenry.

Senior Champion Cow—Barbara McHenry 24th 104144, W. A. McHenry.

Junior Champion Cow—Pride McHenry 73d 116642, W. A. McHenry.

Grand Champion Bull—Glenfoil Thickset 2d 88142, W. A. McHenry.

Grand Champion Cow—Barbara McHenry 24th 104144, W. A. McHenry.

GALLOWAY.

EXHIBITORS.

J. E. Bales & Son, Stockport, Iowa; C. S. Hechtner, Chariton, Iowa; Straub Brothers, Avoca, Nebraska.

AWARDS.

JUDGE ....E. T. DAVIS, Iowa City, Iowa.

Bull Three Years Old or Over—First, Captain 4th of Tarbreoch 30933 (9701), Straub Bros.

Bull Two Years Old and Under Three—First, Douglas of Meadow Lawn, 30618, J. E. Bales & Son; Noble Standard 30754, Straub Brothers.

Bull One Year Old and Under Two—First, Stanley of Maples 32254, C. S. Hechtner; second, Stanley's Mack 33693, J. E. Bales & Son; third, Sedate 33635, Straub Brothers; fourth, Utility 2d of Otoe 32326, Straub Brothers.

Senior Bull Calf—First, Fair Fame, Straub Brothers; second, Douglas of Stockport, J. E. Bales & Son.

Junior Bull Calf—First, Handsome 278, Straub Brothers.

Cow Three Years Old or Over—First, Sadie of Meadow Lawn 26834, Straub Brothers; second, Hawkeye Lady 27121, J. E. Bales; third, Lady Love 2d 24879, C. S. Hechtner; fourth, Lady Graceful 28783, J. E. Bales & Son; fifth, Tena of Otoe 22497, Straub Brothers.

Heifer Two Years Old and Under Three—First, Vinola 4th of Maples 30640, C. S. Hechtner; second, Princess Standard 30723, Straub Brothers; third, Lily May 30803, J. E. Bales & Son; fourth, Vada 30801, J. E. Bales & Son.

Senior Yearling Heifer—First, Merry Maid 32226, Straub Brothers; second, Ada of Maples 32218, C. S. Hechtner; third, Lady Dorothea 2d 32374, J. E. Bales & Son; fourth, Annie Davids 7th 32373, J. E. Bales & Son.

Junior Yearling Heifer—First, Bessie of Maples 32250, C. S. Hechtner; second, Sweet Bell 32767, Straub Brothers.

Senior Heifer Calf—First, Elizabeth, J. E. Bales & Son; second, Carefull of Maples 33976, C. S. Hechtner; third, Dolly Dimple 2d 33957, Straub Brothers.

Junior Heifer Calf—First, Ladylike, Straub Brothers; second, Miss Stanley 33980, C. S. Hechtner; third, Lady Claire, J. E. Bales & Son; fourth, Lady Irving, J. E. Bales & Son; fifth, Adelaide, J. E. Bales & Son.

Exhibitor's Herd—First, Straub Bros.; second, C. S. Hechtner; third, J. E. Bales & Son.

Breeder's Young Herd—First, C. S. Hechtner; second, Straub Brothers; third, J. E. Bales & Son.

Calf Herd—First, J. E. Bales & Son; second, Straub Bros.

Get of Sire—First, C. S. Hechtner; second, Straub Brothers; third, J. E. Bales & Son; fourth, Straub Bros.

Produce of Cow—First, C. S. Hechtner; second, C. S. Hechtner; third, Straub Brothers; fourth, J. E. Bales & Son; fifth, Straub Brothers.

Champion Bull, Any Age—Captain 4th of Tarbreoch 30933 (9701), Straub Bros.

Champion Cow, Any Age—Vinola 4 of Maples 30640, C. S. Hechtner.

POLLED DURHAM.

EXHIBITORS.

Thos. Capper, South English, Iowa; J. W. Deuker, Wellman, Iowa; L. S. Huntley & Son, Chariton, Iowa; Jacob Marti, Lansing, Iowa; J. J. Williams & Son, Grandview, Iowa.

AWARDS.

JUDGE ....L. G. SHAVER, Kalona, Iowa.

Bull Three Years Old or Over—First, Sugar Hill Marshal 5229, J. J. Williams & Son; second, Arcada Duke 3d 5026, H. W. Deuker; third, Amity Bruce 5879, L. S. Huntley & Son.

Bull One Year Old and Under Three—First, Lord Vellum, Vol. 5, H. W. Deuker; second, Littyton Duke 7113, Thos. Capper; third, A Secret, L. S. Huntley.

Bull Calf Under One Year—First, Bruce Marshall, L. S. Huntley & Son; second, Prime Boy 7270, Jacob Marti; third, Secret Marshal, J. J. Williams & Son; fourth, Roan Marshal, L. S. Huntley.

Cow Three Years Old or Over—First, Scottish Bell 4th, Vol. 4, H. W. Deuker; second, Moss Rose 69th, Vol. 4, L. S. Huntley & Son.

Heifer Two Years Old and Under Three—First, Scottish Bell 5th, Vol. 4, H. W. Deuker; second, Victoria 90th, Vol. 4, L. S. Huntley & Son.

Heifer One Year Old and Under Two—Buttonwood Glade 3d, Vol. 4, H. W. Deuker; second, Lova 2d, Vol. 4, H. W. Deuker; third, Bell Boy's Rose, Jacob Marti; fourth, Scottish Bell 7th, Vol. 5, H. W. Deuker; fifth, Princess Carrie, Vol. 5, L. S. Huntley & Son; sixth, Nettie Queen, L. S. Huntley & Son.

Heifer Calf Under One Year—First, Bell Boy's Cleopatra, Jacob Marti; second, Gay Lady, Vol. 5, H. W. Deuker; third, Birdies Brunette, L. S. Huntley & Son; fourth, Scottish Bell 8th, Vol. 5, H. W. Deuker; fifth, Roan Brunette, L. S. Huntley & Son; sixth, Fairy Queen, L. S. Huntley & Son.

Exhibitor's Herd—First, H. W. Deuker; second, L. S. Huntley & Son.

Breeder's Young Herd—First, H. W. Deuker; second, L. S. Huntley & Son.

Get of Sire—First, H. W. Deuker; second, L. S. Huntley & Son.

Produce of Cow—First, H. W. Deuker; second, L. S. Huntley & Son.

Champion Bull, Any Age—Sugar Hill Marshal 5229, J. J. Williams & Son.

Champion Cow, Any Age—Buttonwood Glade 3d Vol. 4, H. W. Deuker.

RED POLLED.

EXHIBITORS.

C. J. Buchanan, Indianapolis, Indiana; Dan E. Clark, Cedar Falls, Iowa; Frank J. Clouss, Clare, Iowa; Chas. Graff, Bancroft, Nebraska; W. S. Hill, Alexandria, S. Dakota.

AWARDS.

JUDGE ....WAYNE DINSMORE, Ames, Iowa.

Bull Three Years Old or Over—First, Durock 14573, Dan E. Clark; second, Logan 13500, Frank J. Clouss; third, Itoo 16507, Chas. Graff; fourth, Cranberry 10192, C. J. Buchanan.

Bull Two Years Old and Under Three—First, Rutland 16053, W. S. Hill; second, Midnight 17947, Dan E. Clark; third, Hurricane 17740, C. J. Buchanan.

Bull One Year Old and Under Two—First, Dudley 18524, W. S. Hill; second, Dude 18866, Frank J. Clouss; third, Iodine 18970, C. J. Buchanan.

Senior Bull Calf—First, Valentine 18539, W. S. Hill; second, Ruperta's Goods, Chas. Graff; third, Ross 19169, Frank J. Clouss; fourth, Bonnie Brae 18540, W. S. Hill; fourth, Zipphawa, Chas. Graff; sixth, Eugean 19168, Frank J. Clouss.

Junior Bull Calf—First, Newton Again 19174, Frank J. Clouss; second, Jester 18971, C. J. Buchanan; third, Ian, Chas. Graff; fourth, Starlight 19153, Dan E. Clark.

Cow Three Years Old or Over—First, Betty 13202, Dan E. Clark; second, Inez 23477, W. S. Hill; third, Irma 19782, Frank J. Clouss; fourth, Ruberta 22307, Chas. Graff; fifth, Buttercup 24686, W. S. Hill; sixth, Inas 25786, Chas. Graff.

Heifer Two Years Old and Under Three—First, Lena 26752, W. S. Hill; second, Myrtle 28577, Frank J. Clouss; third, Miss Saucy 26696, Frank J. Clouss; fourth, Belle 28538, Chas. Graff; fifth, Vera 28110, W. S. Hill; sixth, Cedar Girl 26891, Dan E. Clark.

Senior Yearling Heifer—First, Narcissia 4th 28655, Frank J. Clouss; second, Ione 28115, W. S. Hill; third, Excellence 29140, Chas. Graff; fourth, Quartz 29134, Frank J. Clouss; fifth, Ruberta 29139, Chas. Graff; sixth, Hyacinth B. 27909, C. J. Buchanan.

Junior Yearling Heifer—First, Rosebud 2d 30613, Dan E. Clark; second, Tulip 2d 30612, Dan E. Clark; third, Lala 29859, Chas. Graff; fourth, Rosetty 2d 29111, Dan E. Clark; fifth, Fancy's Pride 29396, Frank J. Clouss; sixth, Arnett 2d 30611, Dan E. Clark.

Senior Heifer Calf—First, Ruth 29686, Frank J. Clouss; second, Florence 29854, W. S. Hill; third, Narcissa 29849, W. S. Hill; fourth, Ilene, Chas. Graff; fifth, Saucy Lady 29687, Frank J. Clouss; sixth, Doris 30639, Frank J. Clouss.

Junior Heifer Calf First, Rosette 3d 30615, Dan E. Clark; second, Tulip 3d 30614, Dan E. Clark; third, Ruby II 30638, Frank J. Clouss; fourth, Fane, Chas. Graff; fifth, Jasamine Rose 30435, C. J. Buchanan.

Exhibitor's Herd—First, Dan E. Clark; second, Frank J. Clouss; third, W. S. Hill; fourth, Chas. Graff; fifth, C. J. Buchanan.

Breeder's Young Herd—First, Frank J. Clouss; second, W. S. Hill; third, Chas. Graff.

Get of Sire—Frank J. Clouss; second, Dan E. Clark; third, W. S. Hill; fourth, Chas. Graff; fifth, Frank J. Clouss.

Produce of Cow—First, Chas. Graff; second, W. S. Hill, third, Chas. Graff; fourth, Dan E. Clark; fifth, Dan E. Clark.

Champion Bull, Any Age—Durock 14573, Dan E. Clark.

Champion Cow, Any Age—Betty 13202, Dan E. Clark.

HOLSTEIN.

EXHIBITORS.

W. B. Barney & Company, Hampton, Iowa; E. M. Castle & Son, Joy, Illinois; Thomas Kayne, Cedar Falls, Iowa; F. P. Knowles, Auburn, Massachusetts; Frank White, Hampton, Iowa.

AWARDS.

JUDGE ....PROF. H. G. VAN PELT, Ames, Ia.

Bull Three Years Old or Over—First, Dijkstra Beauty Lad 32122, W. B. Barney & Company; second, Artis Mercedes Posch 56470, F. P. Knowles; third, Homestead Triumph 41912, Thomas Young Kayne; fourth, Sir Johanna Lad 49393, E. M. Castle & Son.

Bull Two Years Old and Under Three—First, Statesman DeKol, W. B. Barney & Company; second, Cornucopia Pontiac Johanna Lad 48355, Frank White.

Bull One Year Old and Under Two—First, Groveland Ink Hiljoard 57856, Frank White; second, Wit Duchess Gen 2d 59495, W. B. Barney &

Company; third, Karel Korndyke Butter Boy 53659, W. B. Barney & Company.

Bull Calf Under One Year—First, Larrie of Home Farm, W. B. Barney & Company; second, Earle of Aaggie DeKol 2d's Monarch 57208, F. P. Knowles; third, Groveland Pauline Butter Boy, Frank White; fourth, Sir Johanna Lad 2d, E. M. Castle & Son; fifth, Wayne of Home Farm, W. B. Barney & Company.

Cow Three Years Old or Over—First, Parthenea Hengerveld 46004, W. B. Barney & Company; second, Huntress C 57497, F. P. Knowles; third, Lady Ona Hiljoard 58193, Frank White; fourth, Weitske Ormsby DeKol 64605, W. B. Barney & Company; fifth, Geneva Calamity 65978, F. P. Knowles.

Heifer Two Years Old and Under Three—First, Brookside Pontiac Tirania 94201, F. P. Knowles; second, Lady Bonheur Clothilde 2d 109008, W. B. Barney & Company; third, Mercedes Jessa Arrona 91143, Frank White; fourth, Princess Holinger Pride 104632, E. M. Castle & Son.

Heifer One Year Old and Under Two (In Milk)—First, Grovleand Pauline Posch 102357, Frank White; second, Albino Aesula 102201, Frank White.

Heifer One Year Old and Under Two (Dry)—First, Fokje Fontana 105114, F. P. Knowles; second, Clothilde Fay DeKol's 2d 103985, F. P. Knowles; third, Wietske Ormsby DeKol 2d 108228, W. B. Barney & Company; fourth, Larrie Netherland Gem 108615, W. B. Barney & Company; sixth, Katie La Polka 97966, F. P. Knowles.

Heifer Calf Under One Year—First, Lakeside Aaggie 110409, F. P. Knowles; second, Jessie of Home Farm, W. B. Barney & Company; third, Duchess of Home Farm, W. B. Barney & Company; fourth, ————, F. P. Knowles; fifth, Groveland DeKol Korndyke, Frank White.

Exhibitor's Herd—First, W. B. Barney & Company; second, F. P. Knowles; third, Frank White; fourth, E. M. Castle & Son.

Breeder's Young Herd—First, F. P. Knowles; second, W. B. Barney & Company.

Get of Sire—First, F. P. Knowles; second, W. B. Barney & Co.

Produce of Cow—First, F. P. Knowles; second, F. P. Knowles; third, W. B. Barney & Company; fourth, Frank White; fifth, E. M. Castle & Son.

Champion Bull, Any Age—Dijkstra Beauty Lad 32122, W. B. Barney & Company.

Champion Cow, Any Age—Parthenea Hengerveld 46004, W. B. Barney & Company.

JERSEY.

EXHIBITORS.

Dixon & Bruins, Brandon, Wisconsin; Hunkeydory Farm, Pella, Iowa; Smith Brothers, Cameron, Illinois; J. B. Smith, Beatrice, Nebr.

AWARDS.

JUDGE ....PROF. H. G. VANPELT, Ames, Iowa.

Bull Three Years Old or Over—First, Victorias Champion Lad 59197, J. B. Smith; second, Prince Oleof 78530, Smith Bros.

Bull Two Years Old and Under Three—First, Golden Reveries Lad 77380, Hunkydory Farm.

Bull One Year Old and Under Two—First, Teddy Owl 85609, J. B. Smith; second, Combination's Admirer 79768, Smith Bros.

Bull Calf Under One Year—First, Alicante Fox Eminent 84710, Smith Bros.; second, Opal's Fox 85425, Smith Bros.; third, ————, J. B. Smith.

Cow Three Years Old or Over—First, Jersey Dairy Maid 140946, J. B. Smith; second, Pedros Lovely 166873, J. B. Smith; third, Bessie Rosetta 176496, Hunkydory Farm; fourth, Fannie's Babe 201192, Smith Bros.; fifth, Mollie Regina 214249, Smith Bros.

Heifer Two Years Old and Under Three—First, Emanon's Tootsie 218624, J. B. Smith; second, Belmont's Fern 215473, J. B. Smith; third, Silver Coo 198362, Hunkydory Farm; fourth, Opal's Ona 214174, Smith Bros.; fifth, Lexicon Baby 224318, Smith Bros.

Heifer One Year Old and Under Two (In Milk)—First, Silverine's Brown Lady 219449, Smith Bros.; second, Belmonts Gem 219623, J. B. Smith; third, Golden Peter's Tucker 211293, Smith Bros.; fourth, Rose Margot 208252, Hunkydory Farm.

Heifer One Year Old and Under Two (Dry)—Mollie Clark 210162, Hunkydory Farm; second, Lovely Lad's Ona 219570, Smith Bros.; third, Champion's Golden Pet 215166, Smith Bros.

Heifer Calf Under One Year—First, Fluffs Pet, J. B. Smith; second, Belmonts Pride, J. B. Smith; third, Prince Oleof's Lassitude 228175, Smith Bros.; fourth, Oleof's Milk Maid 228799, Smith Bros.; fifth, ————, Hunkydory Farm.

Exhibitor's Herd—First, J. B. Smith; second, Smith Bros.; third, Hunkydory Farm.

Breeder's Young Herd—First, J. B. Smith.

Get of Sire—First, J. B. Smith.

Produce of Cow—First, J. B. Smith; second, J. B. Smith; third, J. B. Smith.

Champion Bull, Any Age—Victorias Champion Lad 59197, J. B. Smith.

Champion Cow, Any Age—Jersey Dairy Maid 140946, J. B. Smith.

AYRSHIRE.

EXHIBITORS.

Barclay Farm, J. W. Oakey, Mgr., Bryn Mawr, Pa.

AWARDS.

JUDGE ....PROF. G. H. VAN PELT, Ames, Iowa.

Bull Three Years Old or Over—First, Lessuesock King of Beauty 9726, Barclay Farms.

Bull Two Years Old and Under Three—First, Riverside Fizzaway 10456, Barclay Farms.

Bull One Year Old and Under Two—Browning's Majestic 11432, Barclay Farms.

Bull Calf Under One Year—First, White Chief of Barclay 11881, Barclay Farms; second, Barclay's Crusader 11882, Barclay Farms.

Cow Three Years Old or Over—First, Finlayston Cherry 6th 21427, Barclay Farms; second, Berleith Snow Drop 22219, Barclay Farms; third, Finlayston Stylish Cherry 21624, Barclay Farms; fourth, Broomhill Minnie 10th 21627, Barclay Farms; fifth, ————, Barclay Farms.

Heifer Two Years Old and Under Three—First, Lilac 3 of Radnor 22134, Barclay Farms; second, Holehouse Bess 23483, Barclay Farms; third, Letta Ann of Radnor 22135, Barclay Farms.

Heifer One Year Old and Under Two—First, ————, Barclay Farms; second, Lady Radnor 23488, Barclay Farms; third, Mary of Pine Lane 23211, Barclay Farms; fourth, White Flora 25647, Barclay Farms; fifth Majestic's Buttercup 24586, Barclay Farms.

Heifer Calf Under One Year—First, Miss Flora of Barclay 25650, Barclay Farms; second, Lady Penn 25654, Barclay Farms; third, Miss Francis 256653, Barclay Farms; fourth, Jane of Barclay 24588, Barclay Farms; fifth, Queen A, 24589, Barclay Farms.

Exhibitor's Herd—First, Barclay Farms; second, Barclay Farms.

Breeder's Young Herd—First, Barclay Farms; second, Barclay Farms.

Get of Sire—First, Barclay Farms; second, Barclay Farms; third, Barclay Farms.

Produce of Cow—First, Barclay Farms; second, Barclay Farms.

Champion Bull, Any Age—First, Lessuessock King of Beauty 9726, Barclay Farms.

Champion Cow, Any Age—First, Finlayston Cherry 6th 21427, Barclay Farms.

GUERNSEY.

EXHIBITORS.

F. M. Buck, Valley Junction, Iowa; A. W. & F. E. Fox, Waukesha, Wisconsin; Howard Greene, Genesee Depot, Wisconsin; W. W. Marsh, Waterloo, Iowa; W. B. Quarton, Algona, Iowa; Wilcox & Stubbs, Des Moines, Iowa.

AWARDS.

JUDGE..................PROF. H. G. VAN PELT, Ames, Iowa.

Bull Three Years Old or Over—First, Lord Mar 14359, W. W. Marsh; second, Golden Ben 7837, A. W. & F. E. Fox; third, Beau Donald 9215, Wilcox & Stubb; fourth, Rollicksom 7715, W. B. Quarton; fifth, Lady's Glenwood 8533, Wilcox & Stubbs.

Bull Two Years Old and Under Three—First, Gratify 12657, A. W. & F. E. Fox; second, Ruchbrooke Masher 12186, W. B. Quarton; third, Glenwood's Jeweller 12299, Howard Greene.

Bull One Year Old and Under Two—First, Hero of the Court li Blicq 14988, W. W. Marsh; second, Robert L 13302, Howard Greene; third, King Taladeen of Chestnut Hill 13450, A. W. & F. E. Fox; fourth, Raynoid II, 13236, W. B. Quarton; fifth, Roller Coaster 13700, Wilcox & Stubbs.

Bull Calf Under One Year—First, Lad of Genesee 14383, Howard Greene; second, Count of Prairie View 14534, Howard Greene; third, Ashburton of Lewison 14403, Howard Greene; fourth, Endeavor's Benjamin 14563, A. W. & F. E. Fox; fifth, King Yeksa Q, W. B. Quarton.

Cow Three Years Old or Over—First, Duenna B 20304, A. W. & F. E. Fox; second, Glow of Rose Farm 26093, W. W. Marsh; third, Lillie of Poplar Grove 16344, A. W. & F. E. Fox; fourth, Glencoe's Bopeep 18602, W. W. Marsh; fifth, Marantha 20306, A. W. & F. E. Fox.

Heifer Two Years Old and Under Three—First, Laura of Brook Hill 27105, Howard Greene; second, ————, W. W. Marsh; third, Queen of the Elms 23793, A. W. & F. E. Fox; fourth, Duenna F 22676, A. W. & F. E. Fox; fifth, Emma F 22677, A. W. & F. E. Fox.

Heifer One Year Old and Under Two—First, Citation 24605, A. W. & F. E. Fox; second, Trixie's Girl 24283, W. B. Quarton; third, Henrietta of Genesee, Howard Greene; fourth, Lalla of Waukesha 24771, A. W. & F. E. Fox; fifth, Queen Yeksa Q 26106, W. B. Quarton.

Heifer Calf Under One Year—First, Lottie M. Greene 27080, Howard Greene; second, Bertha Q of Oakwood, W. B. Quarton; third, Doris of Genesee 26713, Howard Greene; fourth, Camisole Skippack 27201, A. W. & F. E. Fox; fifth, Kathleen's Fancy of Lewison 27135, Howard Greene.

Exhibitor's Herd—First, A. W. & F. E. Fox; second, W. W. Marsh; third, Howard Greene; fourth, W. B. Quarton.

Breeder's Young Herd—First, Howard Greene; second W. B. Quarton.

Get of Sire—First, A. W. & F. E. Fox; second, Howard Greene; third, W. B. Quarton.

Produce of Cow—First, A. W. & F. E. Fox; second, W. B. Quarton; third, Howard Greene.

Champion Bull, Any Age—Camisole Skippack 27201, A. W. & F. E. Fox.

Champion Cow, Any Age—Duenna B 20304, A. W. & F. E. Fox.

TEST OF MILCH COWS.

EXHIBITORS.

J. B. Smith, Beatrice, Nebraska; Barclay Farms, J. W. Oakey, Manager, Bryn Mawr, Pa.; W. B. Barney & Company, Hampton, Iowa; A. W. & F. E. Fox, Waukesha, Wisconsin; Howard Greene, Genesee Depot, Wisconsin; F. P. Knowles, Auburn, Massachusetts; W. W. Marsh, Waterloo, Iowa; Smith Brothers, Cameron, Illinois.

AWARDS.

JUDGE ....PROF. H. G. VAN PELT, Ames, Iowa.

Test of Milch Cows—First, Finlayston Stylish Cherry 21624, Barclay Farms; second, Berleith Snow Drop 2219, Barclay Farms; third, Wietske Ormsby DeKol 64605, W. B. Barney & Company; fourth, Hospital Pledge 105115, F. P. Knowles.

SHORT-HORNS.

(PURE-BRED.)

EXHIBITORS.

J. R. Peak & Son, Winchester, Illinois; C. A. Saunders, Manilla, Iowa; Elmendorf Farm, Lexington, Kentucky; F. W. Harding, Waukesha, Wisconsin; W. H. Dunwoody, Minneapolis, Minnesota; C. W. Daws & Son, Harlan, Iowa; D. Tietjen, Bellevue, Iowa.

AWARDS.

JUDGE ....CAPT. T. E. ROBSON, London, Ont.

Steer, Spayed or Martin Heifer Two Years Old and Under Three—First, I Am It, J. R. Peak & Son.

Steer, Spayed or Martin Heifer One Year Old and Under Two—First, Far View Lad, J. R. Peak & Son; second, Loreman, J. R. Peak & Son.

Steer, Spayed or Martin Heifer Under One Year—First, Good Work, F. W. Harding; second, Jack, Elmendorf Farm; third, Fred V., J. R. Peak & Son.

Champion Steer, Spayed or Martin Heifer—I am It, J. R. Peak & Son.

Champion Group of Three Head, Owned by One Exhibitor——————, J. R. Peak & Son.

FAT SHORT-HORNS—(GRADE OR CROSS BRED).

Steer, Spayed or Martin Heifer Two Years Old and Under Three—First, Royal Heir, W. H. Dunwoody; second, Dufer Thomas, J. R. Peak & Son.

Steer, Spayed or Martin Heifer One Year and Under Two—First, Chancellor's Seal, W. H. Dunwoody; second, Markey, J. R. Peak & Son; third, Red Lad, C. W. Daws & Son.

Steer, Spayed or Martin Heifer Under One Year—First, Pearl, C. W. Daws & Son; second, Dutch Joe, D. Tietjen; third, Baron Heir, W. H. Dunwoody; fourth, Ervert Varino, J. F. Peak & Son.

Champion Steer, Spayed or Martin Heifer—Chancellor's Seal, W. H. Dunwoody.

Champion Group of Three Head, Owned by One Exhibitor——————, W. H. Dunwoody; second, J. R. Peak & Son.

FAT CATTLE—HEREFORDS.

(PURE BRED).

EXHIBITORS.

Cargill & Price, LaCrosse, Wisconsin; Makin Brothers, Grandview, Missouri; J. O. Bryant, Savannah, Missouri.

AWARDS.

JUDGE ....THOS. MORTIMER, Madison, Nebr.

Steer, Spayed or Martin Heifer Two Years Old and Under Three—First, Albany 6th 261727, Cargill & Price.

Steer, Spayed or Martin Heifer One Year Old and Under Two—First, Bonnie Brae 14th 288352, Cargill & Price.

Steer, Spayed or Martin Heifer One Year Old and Under Two—First, Fulfillment 4th 308445, Cargill & Price.

Champion Steer, Spayed or Martin Heifer—Albany 6th 261727, Cargill & Price.

Champion Group of Three Head, Owned by One Exhibitor——————, Cargill & Price.

FAT HEREFORDS—(GRADE OR CROSS BRED).

Steer, Spayed or Martin Heifer Under One Year Old—First, Paragon A, Makin Bros.

Champion Steer, Spayed or Martin Heifer—Paragon A, Makin Bros.

FAT CATTLE—ABERDEEN ANGUS.
(PURE BRED).

EXHIBITORS.

W. J. Miller, Newton, Iowa.

AWARDS.

JUDGE ....CHAS. ESCHER, JR., Botna, Iowa.

Steer, Spayed or Martin Heifer Two Years Old and Under Three—First, Metz Prince 4th 1630, W. J. Miller.

Steer, Spayed or Martin Heifer One Year Old and Under Two—First, Perfection 1577, W. J. Miller; second, Proud Black Cap 1572, W. J. Miller.

Steer, Spayed or Martin Heifer Under One Year Old—First, King's Choice, W. J. Miller.

Champion Steer, Spayed or Martin Heifer—Metz Prince 4th 1630, W. J. Miller.

Champion Group of Three Head, Owned by One Exhibitor————, W. J. Miller.

FAT ABERDEEN ANGUS—(GRADE OR CROSS BRED).

Steer, Spayed or Martin Heifer Two Years Old and Under Three—My Choice, W. J. Miller.

Steer, Spayed or Martin Heifer One Year Old and Under Two—First, Pat, W. J. Miller.

Steer, Spayed or Martin Heifer Under One Year Old—First, Victor, W. J. Miller.

Champion Steer, Spayed or Martin Heifer————, W. J. Miller.

FAT CATTLE—GALLOWAY.
(PURE BRED).

EXHIBITORS.

C. S. Hechtner, Chariton, Iowa.

AWARDS.

JUDGE ....E. T. DAVIS, Iowa City, Iowa.

Steer, Spayed or Martin Heifer Two Years Old and Under Three—First, Tom of Maples, C. S. Hechtner.

Steer, Spayed or Martin Heifer One Year Old and Under Two—First, Dick of Maples, C. S. Hechtner.

Steer, Spayed or Martin Heifer Under One Year Old—First, Harry of Maples, C. S. Hechtner.

FAT CATTLE—GRAND CHAMPION.

EXHIBITORS.

Cargill & Price, LaCrosse, Wisconsin; W. H. Dunwoody, Minneapolis, Minnesota; W. J. Miller, Newton; J. R. Peak & Son, Winchester, Illinois.

AWARDS.

JUDGE ....JOHN CRAIG, San Antonio, Texas.

Steer, Spayed or Martin Heifer, any age or breed, limited to sweepstakes or champion steers, spayed or martin heifers winning in pure bred Short-Horn, Hereford, Aberdeen-Angus, Galloway and the grade and cross-bred sections——————, W. J. Miller.

FAT CATTLE—GRAND CHAMPION GROUP.

EXHIBITORS.

Cargill & Price, LaCrosse, Wisconsin; W. H. Dunwoody, Minneapolis, Minnesota; W. J. Miller, Newton; J. R. Peak & Son, Winchester, Illinois.

JUDGE ....JOHN CRAIG, San Antonio, Tex.

Grand Champion Group of Three Steers, Spayed or Martin Heifers, consisting of one steer, spayed or martin heifer two years and under three, one one year and under two, and one under one year, owned by one exhibitor. Competition limited to the champion groups in Short-horn, Hereford, Aberdeen-Angus, Galloway and grade and cross-bred sections—Awarded to W. H. Dunwoody.

SWINE DEPARTMENT.

SUPERINTENDENT ....R. S. JOHNSTON, Columbus Junction, Iowa.

POLAND CHINA.

EXHIBITORS.

F. W. Akers, Laurel, Iowa; Chas. Ash, West Union, Iowa; J. W. Blackford, Hillsboro, Iowa; J. P. Bonner, Panora, Iowa; H. G. Boyer, Lovilla, Iowa; Free S. Bradney, Eagleville, Missouri; F. L. Bunton, West Union, Iowa; S. P. Chiles, Fairfield, Iowa; W. J. Crow, Webb, Iowa; J. I. Davis, Mt. Hammill, Iowa; J. S. Fawcett & Son, Springdale, Iowa; S. Fleming, Stuart, Iowa; R. H. Fitchenmueller, Farmington, Iowa; J. E. Francis, New Lennox, Illinois; John Francis & Son, New Lennox, Illinois; G. Friday & Son, Sigourney, Iowa; J. W. Garvey, Auburn, Illinois; John H. Gibbons, North English, Iowa; J. A. Goltry, Russell, Iowa; J. A. Gosick, Fairfield, Iowa; R. W. Halford, Manning, Iowa; H. J. Hemmerling, Dike, Iowa; A. P. Hoisington, Fontanelle, Iowa; L. Hunsberger, Elgin, Iowa; U. O. Hunt, Ravenwood, Missouri; Nels C. Jensen, Exira, Iowa; Meyer Jessen, Melbourne, Iowa; C. F. Keeling, Avon, Iowa; A. J. Kent, Elburn Illinois;

Koebel Bros., Wayland, Iowa; Joe Kramer, Elkader, Iowa; Chas. H. Krumm, Postville, Iowa; Wm. Lentz, Ankeny, Iowa; J. D. Lingenfelter, Altoona, Iowa; D. C. Lonergan, Florence, Nebraska; A. J. Lytle, Oskaloosa, Iowa; S. G. McFadden & Company, West Liberty, Iowa; J. A. Mason, Carlisle, Iowa; J. E. Meharry, Tolono, Illinois; E. M. Metzger, Fairfield, Iowa; John Meyer, Newton, Iowa; John Miller, Rock Valley, Iowa; James O'Donnel, Ames, Iowa; F. N. Orr & Son, Albia, Iowa; J. W. Parker, Columbia, Iowa; D. H. Paul, Laurel, Iowa; Wm. Pedrick & Son, Ottumwa, Iowa; Prouty & Keeling, Council Bluffs, Iowa; Andrew Rossow, Lohrville, Iowa; E. A. Seaba, Sigourney, Iowa; Schrader & Sexsmith, Greenfield, Iowa; Mark I. Shaw, Monroe, Iowa; Oscar Swallow, Waukee, Iowa; J. H. Watson, Madrid, Iowa; Wellington & Spring, LaFayette, Indiana; Wm. Wingate, Clinton, Missouri; J. H. Wintermute, Blockton, Iowa; G. H. White, Emerson, Iowa.

AWARDS.

JUDGE ....W. Z. SWALLOW, Waukee, Iowa.

Boar Two Years Old or Over—First, John Francis & Son; second, J. E. Meharry; third, H. J. Hemmerling; fourth, Joe Kramer; fifth, S. G. McFadden & Co.; sixth, U. O. Hunt; seventh, Meyer Jessen.

Boar Eighteen Months and Under Two Years—First, Wellington & Spring; second, H. G. Boyer; third, John H. Gibbons; fourth, Chas. H. Krumm; fifth, D. H. Paul; sixth, John P. Meyer; seventh, Jno. Francis & Son.

Boar One Year and Under Eighteen Months—First, Wellington & Spring; second, S. G. McFadden & Company; third, S. P. Chiles; fourth, John Francis & Son; fifth, J. I. Davis; sixth, Charles Ash; seventh, J. P. Bonner.

Boar Six Months and Under One Year—First, S. P. Chiles; second, Wellington & Spring; third, J. E. Meharry; fourth, J. P. Bonner; fifth, J. L. Gosick; sixth, Oscar Swallow; seventh, Nels C. Jensen.

Boar Under Six Months—First, J. L. Gosick; second, S. P. Chiles; third, A. P. Hoisington; fourth, J. P. Bonner; fifth, S. Fleming; sixth, A. P. Hoisington; seventh, J. A. Mason.

Sow Two Years Old or Over—First, J. E. Meharry; second, Wellington & Spring; third, Wellington & Spring; fourth, John Francis & Son; fifth, H. J. Hemmerling; sixth, John Francis & Son; seventh, James O'Donnel.

Sow Eighteen Months and Under Two Years—First, J. E. Meharry; second, Wellington & Spring; third, H. J. Hemmerling; fourth, John Francis & Son; fifth, J. E. Meharry; sixth, D. H. Paul; seventh, S. Fleming.

Sow One Year and Under Eighteen Months—First, Wellington & Spring; second, J. H. Watson; third, Wellington & Spring; fourth, F. W. Akers; fifth, D. H. Paul; sixth, J. P. Bonner; seventh, D. H. Paul.

Sow Six Months and Under One Year—First, Wellington & Spring; second, Wellington & Spring; third, D. H. Paul; fourth, A. P. Hoisington; fifth, John Francis & Son; sixth, J. E. Meharry; seventh, J. E. Meharry.

Sow Under Six Months—First, J. L. Gosick; second, Oscar Swallow; third, J. L. Gosick; fourth, John Francis & Son; fifth, J. E. Francis; sixth, J. E. Francis; seventh, S. P. Chiles.

Boar and Three Sows Over One Year—First, Wellington & Spring; second, J. E. Meharry; third, Wellington & Spring; fourth, John Francis & Son; fifth, H. J. Hemmerling; sixth, D. H. Paul; seventh, S. Fleming.

Boar and Three Sows Under One Year—First, Wellington & Spring; second, J. E. Meharry; third, J. E. Francis; fourth, John Francis & Son

Boar and Three Sows Over One Year Bred by Exhibitor—First, Wellington & Spring; second, John Francis & Son; third, D. H. Paul.

Boar and Three Sows Under One Year Bred by Exhibitor—First, Wellington & Spring; second, J. E. Meharry; third, J. E. Francis; fourth, John Francis & Son.

Get of Sire—First, Wellington & Spring; second, J. E. Meharry; third, Wellington & Spring; fourth, J. A. Mason; fifth, J. E. Francis; sixth, John Francis & Son; seventh, S. P. Chiles.

Produce of Sow—First, J. A. Mason; second, J. E. Francis; third, S. P. Chiles; fourth, John Miller; fifth, D. H. Paul.

Champion Boar, Any Age—John Francis & Son.

Champion Sow, Any Age—J. E. Meharry.

Champion Boar, Any Age Bred by Exhibitor—Wellington & Spring.

Champion Sow, Any Age Bred by Exhibitor—Wellington & Spring.

BERKSHIRES.

EXHIBITORS.

C. A. Evans, Elliott, Iowa; Orlando Jacob, Mediapolis, Iowa; W. O. Knapp, Guthrie Center, Iowa; John C. Miller, Harlan, Iowa; McDonald Bros., Montezuma, Iowa; J. M. McPherson & Son, Stuart, Iowa; J. W. Ogle, Ames, Iowa; Frank Teal, Stockport, Iowa; The Farmer Farm, W. J. Gregg, Supt. Farmington, Minnesota.

AWARDS.

JUDGE ....N. H. GENTRY, Sedalia, Mo.

Boar Two Years Old or Over—First, The Farmer Farm; second, Orlando Jacob.

Boar Eighteen Months and Under Two Years—First, J. M. McPherson & son; second, McDonald Bros.; third, The Farmer Farm; fourth, C. A. Evans.

Boar One Year and Under Eighteen Months—First, John C. Miller; second, The Farmer Farm; third, J. M. McPherson & Son; fourth, McDonald Bros.; fifth, John C. Miller; sixth, Orlando Jacob.

Boar Under Six Months—First, The Farmer Farm; second, J. W. Ogle; third, C. A. Evans; fourth, J. W. Ogle; fifth, The Farmer Farm; sixth, McDonald Bros.; seventh, C. A. Evans.

Sow Two Years Old or Over—First, C. A. Evans; second, The Farmer Farm; third, McDonald Bros.; fourth, The Farmer Farm; fifth, McDonald Bros.; sixth, Orlando Jacob; seventh, John C. Miller.

Sow Eighteen Months and Under Two Years—First, C. A. Evans; second, The Farmer Farm; third, J. M. McPherson & Son; fourth, The Farmer Farm; fifth, C. A. Evans; sixth, J. M. McPherson & Son; seventh, Orlando Jacob.

Sow One Year and Under Eighteen Months—First, The Farmer Farm; second, The Farmer Farm; third, J. M. McPherson & Son; fourth, W. O. Knapp; fifth, J. M. McPherson & Son; sixth, W. O. Knapp; seventh, McDonald Bros.

Sow Six Months and Under One Year—First, The Farmer Farm; second, McDonald Bros.; third, McDonald Bros.; fourth, J. M. McPherson & Son; fifth, J. M. McPherson & Son; sixth, The Farmer Farm; seventh, John C. Miller.

Sow Under Six Months—First, The Farmer Farm; second, Frank Teal; third, The Farmer Farm; fourth, Frank Teal; fifth, W. O. Knapp; sixth, C. A. Evans; seventh, J. M. McPherson & Son.

Boar and Three Sows Over One Year—First, C. A. Evans; second, J. M. McPherson & Son; third, The Farmer Farm; fourth, McDonald Bros.; fifth, The Farmer Farm; sixth, W. O. Knapp.

Boar and Three Sows Under One Year—First, McDonald Bros.; second, McDonald Bros.; third, The Farmer Farm; fourth, J. W. Ogle; fifth, The Farmer Farm; sixth, J. M. McPherson & Son; seventh, W. O. Knapp.

Get of Sire—First, The Farmer Farm; second, McDonald Bros.; third, The Farmer Farm; fourth, J. M. McPherson & Son; fifth, W. O. Knapp; sixth, J. W. Ogle; seventh, W. O. Knapp.

Produce of Sow—First, The Farmer Farm; second, J. W. Ogle; third, W. O. Knapp; fourth, C. A. Evans; fifth, Frank Teal; sixth, McDonald Bros.

Champion Boar, Any Age—John C. Miller.

Champion Sow, Any Age—C. A. Evans.

Champion Boar, Any Age Bred by Exhibitor—The Farmer Farm.

Champion Sow, Any Age Bred by Exhibitor—The Farmer Farm.

CHESTER WHITES.

EXHIBITORS.

. Allen Bros., Russell, Iowa; Alden Anderson, Radcliffe, Iowa; J. L. Barber, Harlan, Iowa; B. M. Boyer, Farmington, Iowa; R. P. Downing, Garden City, Kansas; W. H. Dunbar, Jefferson, Iowa; F. R. Ensminger, Gilman, Iowa; R. F. & W. M. Fantz, Pleasant Hill, Mo.; W. F. Hemmerling, Dike, Iowa; Henninger Bros. & Smith, Geneseo, Ill.; Geo. A. Lasley, Selma, Iowa; E. L. Leavens, Shell Rock, Iowa; D. H. Lewis, Geneseo, Illinois; J. A. Loughridge, Delta, Iowa; J. H. Mahannah, North English, Iowa; Will Michael, Selma, Iowa; E. L. Nagle & Son, Deep River, Iowa; N. A. Ranck, Niota, Illinois; Chas. Seaman, Jefferson, Iowa; W. W. Waltmire, Peculiar, Missouri; Wm. Whitted & Son, Monroe, Iowa; W. T. Barr, Ames, Iowa.

AWARDS.

JUDGE ....H. L. ORCUTT, Monroe, Iowa.

Boar Two Years Old or Over—First, W. F. Hemmerling; second, R. P. Downing; third, E. L. Leavens; fourth, E. I. Nagle & Son; fifth, W. T. Barr; sixth, W. W. Waltmire; seventh, E. L. Leavens.

Boar Eighteen Months and Under Two Years—First, R. F. & W. M. Fantz; second, N. A. Ranck; third, W. W. Waltmire.

Boar One Year and Under Eighteen Months—First, E. L. Leavens; second, Allen Bros.; third, D. H. Lewis; fourth, J. H. Mahannah; fifth, D. H. Lewis; sixth, W.F. Hemmerling; seventh, W. F. Hemmerling.

Boar Six Months and Under One Year—First, E. L. Nagle & Sons; second, W. T. Barr; third, J. H. Mahannah; fourth, E. L. Nagle & Son; fifth, J. H. Mahannah; sixth, D. H. Lewis; seventh, R. F. & W. M. Fantz.

Boar Under Six Months—E. L. Nagle & Son; second, Alden Anderson; third, Henninger Bros. & Smith; fourth, E. L. Nagle & Son; fifth, Alden Anderson; sixth, J. A. Loughbridge; seventh, W. H. Dunbar.

Sow Two Years Old or Over—First, E. L. Leavens; second, W. T. Barr; third, E. L. Leavens; fourth, D. H. Lewis; fifth, Allen Bros.; sixth R. F. & W. M. Fantz; seventh, W. W. Waltmire.

Sow Eighteen Months and Under Two Years—D. H. Lewis; second, R. F. & W. M. Fantz; third, D. H. Lewis; fourth, W. W. Waltmire; fifth, F. R. Ensminger; sixth, W. W. Waltmire; seventh, N. A. Ranck.

Sow One Year and Under Eighteen Months—First, W. F. Hemmerling; second, E. L. Leavens; third, W. H. Dunbar; fourth, D. H. Lewis; fifth, W. F. Hemmerling; sixth, E. L. Leavens; seventh, Allen Bros.

Sow Six Months and Under One Year—First, E. L. Nagle & Son; second, J. H. Mahannah; third, J. H. Mahannah; fourth, D. H. Lewis; fifth, D. H. Lewis; sixth, Henninger Bros. & Smith; seventh Henninger Bros. & Smith.

Sow Under Six Months—First, E. L. Nagle & Son; second, Henninger Bros. & Smith; third, Alden Anderson; fourth, Alden Anderson; fifth, Henninger Bros. & Smith; sixth, D. H. Lewis; seventh, W. T. Barr.

Boar and Three Sows Over One Year—First, W. F. Hemmerling; second, E. L. Leavens; third, D. H. Lewis; fourth, D. H. Lewis; fifth, E. L. Leavens; sixth, Allen Bros.; seventh, W. W. Waltmire.

Boar and Three Sows Under One Year—First, E. L. Nagle & Son; second, J. H. Mahannah; third, E. L. Nagle & Son; fourth, D. H. Lewis; fifth, Alden Anderson; sixth, Henninger Bros. & Smith; seventh, R. F. & W. M. Fantz.

Boar and Three Sows Over One Year Bred by Exhibitor—First, E. L. Leavens; second, W. F. Hemmerling; third, D. H. Lewis; fourth, D. H. Lewis; fifth, E. L. Leavens; sixth, Allen Bros.

Boar and Three Sows Under One Year Bred by Exhibitor—First, E. L. Nagle & Son; second, J. H. Mahannah; third, E. L. Nagle & Son; fourth, D. H. Lewis; fifth, Alden Anderson; sixth, Henninger Bros. & Smith; seventh, R. F. & W. M. Fantz.

Get of Sire—First, E. L. Leavens; second, E. L. Nagle & Son; third, J. H. Mahannah; fourth, E. L. Nagle & Son; fifth, W. F. Hemmerling; sixth, E. L. Leavens; seventh, D. H. Lewis.

Produce of Sow—First, E. L. Nagle & Son; second, Alden Anderson; third, Henninger Bros. & Smith; fourth, D. H. Lewis; fifth, B. M. Boyer; sixth, R. F. & W. M. Fantz.

Champion Boar, Any Age—W. F. Hemmerling.

Champion Sow, Any Age—E. L. Leavens.

Champion Boar, Any Age Bred by Exhibitor—E. L. Leavens.

Champion Sow, Any Age Bred by Exhibitor—E. L. Leavens.

SPECIAL PRIZES OFFERED BY THE NATIONAL CHESTER WHITE RECORD ASSOCIATION.

Best Boar, (Recorded in National Chester White Record Ass'n)—E. L. Leavens.

Best Sow, (Recorded in National Chester White Record Ass'n)—E. L. Leavens.

DUROC JERSEYS.

EXHIBITORS.

H. S. Allen, Russell, Iowa; Allen & Van Nice, Russell, Iowa; A. P. Alsin, Boone, Iowa; J. B. Ashby, Audubon, Iowa; L. Baker, Mingo, Iowa; Balmat & Son, Mason City, Iowa; John A. Baughman & Son, Grinnell, Iowa; Baxter & Comer, Carlinville, Illinois; W. R. Bennethun, Madrid, Iowa; Walter Bowen, Neola, Iowa; H. E. Browning, Hersman, Illinois; F. B. Butterfield, Ankeny, Iowa; E. M. Castle & Son, Joy Illinois; Charles Cooper, Ferris, Illinois; C. C. Cottingham, Weldon, Iowa; J. A. Cottingham, Indianola, Iowa; R. L. Comer, Carlinville, Illinois; M. C. Cramer, Monroe, Iowa; U. G. Davidson, Scranton, Iowa; Mark W. Eddy & Ed. Harris, Fontanelle, Iowa; F. Fowler & Son, Menlo, Iowa; Gawley & Southall, Irwin, Iowa; M. W. Greer, Rushville, Illinois; J. E. Grant, Carlisle, Iowa; A. F. Hager, Avoca, Iowa; Joshua Halton, Panora, Iowa; J. E. Hammer, Jefferson, Iowa; Hanks & Bishop, New London, Iowa; R. J. Harding, Macedonia, Iowa; Henninger Bros. & Smith, Geneseo, Illinois; F. H. Herring, Iowa City, Iowa; G. W. Hocket, Manning, Iowa; Claude Hoffman, Scranton, Iowa; Edwin Hummer, Iowa City, Iowa; Ira Jackson, Tippecanoe City, Ohio; S. E. Jordan, Monteith; Jno. Justice, Ankeny, Iowa; J. W. Kent, Lake City, Iowa; O. A. Kilpatrick, Harlan, Iowa; A. A. Lein, Story City, Iowa; Geo. R. Manifold, Shannon City, Iowa; B. C. Marts, Polk City, Iowa; A. L. Massman, Radcliffe, Iowa; D. Nauman, West Liberty, Iowa; A. R. Olson, Woodward, Iowa; O. A. Olson, Madrid, Iowa; O. E. Osborn, Weston, Iowa; A. W. H. Orr, Lorimor, Iowa; O. R. Peterson, Sheldahl, Iowa; A. J. Pinck, Maxwell, Iowa; Geo. H. Purdy, Mason City, Iowa; C. A. Rassmusseen, Harlan, Iowa; J. O. Reese & Co., Eldora, Iowa; G. J. Rinker, Ogden, Iowa; E. J. Russell, Blair, Nebraska; Geo. W. Seckman & Co., Mt. Sterling, Illinois; W. M. Sells, Indianola, Iowa; H. A. Sexsmith, Greenfield, Iowa; R. W. Shafer, Westport, Indiana; Shaver Bros., Kalona, Iowa; C. M. Stout, Rose Hill, Iowa; G. W. Stout, Rose Hill, Iowa; F. A. Strong, Orient, Iowa; S. W. Swanson, Stanton, Iowa; L. E. Thomas, Golden, Illinois; John Thompson, Lake City, Iowa; C. O. Thornburg, Pleasantville, Iowa; L. R. Van Nice, Russell, Iowa; C. E. Veak, Essex, Iowa; Waltmeyer Bros., Melbourne, Iowa; J. E. Wehr, Portsmouth, Iowa; John Wellendorf, Algona, Iowa; N. J. Wilkins, Lake City, Iowa; W. L.

Willey, Menlo, Iowa; Wilson & Reed, Delta, Iowa; White & Dewey, Afton, Iowa; S. P. Freed, Ames, Iowa; G. W. Grigsby, Sheldahl, Iowa; Geo. H. Miller, Chariton, Iowa.

AWARDS.

JUDGE ....PROF. W. J. KENNEDY, Ames, Iowa.

JUDGE ....PROF. KILDEE, Ames, Iowa.

Boar Two Years Old or Over—First, Baxter & Comer; second, Waltmeyer Bros.; third, Hanks & Bishop; fourth, H. E. Browning; fifth, W. R. Bennethun; sixth, A. P. Alsin; seventh, R. J. Harding.

Boar Eighteen Months and Under Two Years—First, Baxter & Comer; second, Allen Miller; third, R. J. Harding; fourth, W. L. Willey; fifth, Allen & Van Nice; sixth, E. M. Castle & Son; seventh, M. W. Greer.

Boar One Year and Under Eighteen Months—First, H. E. Browning; second, Chas. Cooper; third, R. J. Harding; fourth, L. E. Thomas; fifth, F. H. Herring; sixth, Waltmeyer Bros.; seventh, C. A. Rasmussen.

Boar Six Months and Under One Year—First, Baxter & Comer; second, R. J. Harding; third, H. S. Allen; fourth, H. E. Browning; fifth, O. A. Olson; sixth, H. S. Allen; seventh, Baxter & Comer.

Boar Under Six Months—First, W. M. Sells; second, W. M. Sells; third, Wilson & Reed; fourth, Henninger Bros & Smith; fifth, C. A. Rasmussen; sixth, Geo. H. Purdy; seventh, F. Fowler & Son.

Sow Two Years Old or Over—First, Hanks & Bishop; second, F. Fowler & Son; third, Balmat & Son; fourth, White & Dewey; fifth, Balmat & Son; sixth, J. E. Hammer; seventh, R. W. Shafer

Sow Eighteen Months and Under Two Years—First, R. W. Shafer; second, Waltmeyer Bros.; third, G. W. Hocket; fourth, J. E. Hammer; fifth, Wilson & Reed; sixth, H. E. Browning; seventh, G. W. Hocket.

Sow One Year and Under Eighteen Months—First, Balmat & Son; second, Claude Hoffman; third, Waltmeyer Bros.; fourth, Claude Hoffman; fifth, E. M. Castle & Son; sixth, R. J. Harding; seventh, H. E. Browning.

Sow Six Months and Under One Year—First, E. M. Castle & Son; second, E. M. Castle & Son; third, J. O. Reese & Co.; fourth, Geo. H. Purdy; fifth, Hanks & Bishop; sixth, H. E. Browning; seventh, G. W. Hocket.

Sow Under Six Months—First, W. M. Sells; second, W. M. Sells; third, F. H. Herring; fourth, Hanks & Bishop; fifth, R. W. Shafer; sixth, Wilson & Reed; seventh, Wilson & Reed.

Boar and Three Sows Over One Year—First, Waltmeyer Bros.; second, Claude Hoffman; third, Hanks & Bishop; fourth, Balmat & Son; fifth, H. E. Browning; sixth, R. J. Harding; seventh, G. W. Hocket.

Boar and Three Sows Under One Year—First, W. M. Sells; second, Baxter & Comer; third, Baxter & Comer; fourth, H. E. Browning; fifth, Balmat & Son; sixth, E. M. Castle & Son; seventh, R. J. Harding.

Boar and Three Sows Over One Year Bred by Exhibitor—First, Waltmeyer Bros.; second, E. M. Castle & Son; third, R. J. Harding; fourth, H. S. Allen; fifth, C. E. Veak; sixth, G. W. Hocket; seventh, A. P. Alsin.

Boar and Three Sows Under One Year Bred by Exhibitor—First, W. M. Sells; second, Baxter & Comer; third, Baxter & Comer; fourth, Balmat &

Son; fifth, E. M. Castle & Son; sixth, R. J. Harding; seventh, G. W. Hockett.

Get of Sire—First, Waltmeyer Bros.; second, W. M. Sells; third, Baxter & Comer; fourth, O. A. Olson; fifth, Baxter & Comer; sixth, R. J. Harding; seventh, Balmat & Son.

Produce of Sow—First, W. M. Sells; second, Balmat & Son; third, R. W. Shafer; fourth, Hanks & Bishop; fifth, W. M. Sells; sixth, G. W. Stout; seventh, Claude Hoffman.

Champion Boar, Any Age—Baxter & Comer.

Champion Sow, Any Age—Hanks & Bishop.

Champion Boar, Any Age Bred by Exhibitor—Chas. Cooper.

Champion Sow, Any Age, Bred by Exhibitor—R. W. Shafer.

LARGE YORKSHIRES.

EXHIBITORS.

F. M. Buck, Valley Junction, Iowa; B. F. Davidson, Menlo, Iowa.

AWARDS.

JUDGE ....WILSON ROWE, Ames, Iowa.

Boar Two Years Old or Over—First, B. F. Davidson; second, B. F. Davidson.

Boar Eighteen Months and Under Two Years—First, B. F. Davidson.

Boar One Year and Under Eighteen Months—First, F. M. Buck; second, B. F. Davidson.

Boar Under Six Months—First, B. F. Davidson; second, F. M. Buck.

Sow Two Years Old or Over—First, B. F. Davidson; second, B. F. Davidson.

Sow Eighteen Months and Under Two Years—First, B. F. Davidson; second, B. F. Davidson.

Sow One Year and Under Eighteen Months—First, B. F. Davidson.

Sow Six Months and Under One Year—First, B. F. Davidson; second, B. F. Davidson.

Sow Under Six Months—First, F. M. Buck; second, B. F. Davidson; third, B. F. Davidson.

Boar and Three Sows Over One Year—First, B. F. Davidson; second, B. F. Davidson.

Boar and Three Sows Under One Year—First, F. M. Buck; second, B. F. Davidson.

Boar and Three Sows Over One Year Bred by Exhibitor—First, B. F. Davidson; second, B. F. Davidson.

Boar and Three Sows Under One Year Bred by Exhibitor—First, F. M. Buck; second B. F. Davidson.

Get of Sire—First, B. F. Davidson; second, F. M. Buck; third, B. F. Davidson.

Produce of Sow—First, F. M. Buck.

Champion Boar, Any Age—B. F. Davidson.

Champion Sow, Any Age—B. F. Davidson.

Champion Boar, Any Age Bred by Exhibitor—B. F. Davidson.

Champion Sow, Any Age, Bred by Exhibitor—B. F. Davidson.

TAMWORTHS.

EXHIBITORS.

J. W. Justice & Son, Kalona, Iowa; J. P. McCollum, Ferris, Illinois; Patterson & Bonham, Kalona, Iowa; C. C. Roup, Kalona, Iowa.

AWARDS.

JUDGE ....PROF. THOMAS SHAW, St. Anthony Park, Minn.

Boar Two Years Old or Over—First, J. P. McCollum; second, J. P. McCollum; third, C. C. Roup; fourth, Patterson & Bonham; fifth, J. W. Justice & Son.

Boar Eighteen Months and Under Two Years—First, J. P. McCollum; second, C. C. Roup; third, J. P. McCollum; fourth, J. W. Justice & Son.

Boar One Year and Under Eighteen Months—First, J. W. Justice & Son; second, J. P. McCollum; third, J. W. Justice & Son; fourth, Patterson & Bonham.

Boar Six Months and Under One Year—First, J. W. Justice & Son; second, Patterson & Bonham; third, J. P. McCollum.

Boar Under Six Months—First, J. W. Justice & Son; second, J. W. Justice & Son; third, J. P. McCollum; fourth, J. P. McCollum; fifth, C. C. Roup.

Sow Two Years Old and Over—First, J. W. Justice & Son; second, C. C. Roup; third, J. P. McCollum; fourth, C. C. Roup; fifth, J. P. McCollum.

Sow Eighteen Months and Under Two Years—First, J. P. McCollum; second, Patterson & Bonham; third, J. W. Justice & Son.

Sow One Year and Under Eighteen Months—First, J. P. McCollum; second, J. P. McCollum; third, J. W. Justice & Son; fourth, J. W. Justice & Son; fifth, Patterson & Bonham.

Sow Six Months and Under One Year—First, J. W. Justice & Son; second, J. W. Justice & Son; third, J. P. McCollum; fourth, J. P. McCollum; fifth, Patterson & Bonham.

Sow Under Six Months—First, J. W. Justice & Son; second, J. W. Justice & Son; third, C. C. Roup; fourth, J. P. McCollum; fifth, C. C. Roup; sixth, J. P. McCollum.

Boar and Three Sows Over One Year—First, J. W. Justice & Son; second, J. P. McCollum; third, Patterson & Bonham; fourth, J. P. McCollum; fifth, C. C. Roup.

Boar and Three Sows Under One Year—First, J. W. Justice & Son; second, J. W. Justice & Son; third, J. P. McCollum; fourth, Patterson & Bonham.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, J. P. McCollum; second, J. W. Justice & Son; third, J. P. McCollum; fourth, Patterson & Bonham.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, J. W. Justice & Son; second, J. P. McCollum.

Get of Sire—First, J. P. McCollum; second, J. W. Justice & Son; third, Patterson & Bonham.

Produce of Sow—First, J. W. Justice & Son; second, J. P. McCollum.

Champion Boar, Any Age—J. P. McCollum.

Champion Sow, Any Age—J. W. Justice & Son.

Champion Boar Any Age, Bred by Exhibitor—J. P. McCollum.

Champion Sow Any Age, Bred by Exhibitor—J. P. McCollum.

HAMPSHIRE.

EXHIBITORS.

A. J. Boles, Alta, Iowa; W. J. Brinigar, Blythedale, Missouri; A. L. Goodenough, Morrison, Illinois; G. S. Lawson, Ravenwood, Missouri; Frank Morrill & Company, Niota, Illinois; E. C. Stone, Armstrong, Illinois; Chas. M. Stone, Armstrong, Illinois.

AWARDS.

JUDGE ....GEO. B. BUCK.

Boar Two Years Old or Over—First, E. C. Stone; second, W. J. Brinigar; third, E. C. Stone; fourth, Chas. M. Stone; fifth, W. J. Brinigar.

Boar Eighteen Months and Under Two Years—First, W. J. Brinigar; second, E. C. Stone.

Boar One Year and Under Eighteen Months—First, Frank Morrill & Company; second, G. S. Lawson; third, W. J. Brinigar; fourth, E. C. Stone; fifth, G. S. Lawson.

Boar Six Months and Under One Year—First, E. C. Stone; second, W. J. Brinigar; third, E. C. Stone.

Boar Under Six Months—First, Frank Morrill & Co.; second, E. C. Stone; third, G. S. Lawson; fourth, W. J. Brinigar; fifth, E. C. Stone.

Sow Two Years or Over—First, W. J. Brinigar; second, Frank Morrill & Co.; third, G. S. Lawson; fourth, W. J. Brinigar; fifth, E. C. Stone; sixth, E. C. Stone.

Sow Eighteen Months and Under Two Years—First, Frank Morrill & Co.; second, W. J. Brinigar; third, E. C. Stone.

Sow One Year and Undeer Eighteen Months—First, Frank Morrill & Co.; second, W. J. Brinigar; third, E. C. Stone; fourth, Frank Morrill & Co.; fifth, E. C. Stone.

Sow Six Months and Under One Year—First, E. C. Stone; second, W. J. Brinigar; third, W. J. Brinigar; fourth, E. C. Stone.

Sow Under Six Months—First, Frank Morrill & Co.; second, W. J. Brinigar; third, E. C. Stone; fourth, W. J. Brinigar; fifth, E. C. Stone; sixth, G. S. Lawson.

Boar and Three Sows Over One Year—First, Frank Morrill & Co.; second, W. J. Brinigar; third, E. C. Stone; fourth G. S. Lawson.

Board and Three Sows Under One Year—First, W. J. Brinigar; second E. C. Stone; third, G. S. Lawson; fourth, Frank Morrill & Co.; fifth, E. C. Stone.

Boar and Three Sows Over One Year Bred by Exhibitor—First, Frank Morrill & Co.; second, W. J. Brinigar; third, E. C. Stone; fourth G. S. Lawson.

Boar and Three Sows Under One Year Bred by Exhibitor—First, W. J. Brinigar; second, E. C. Stone; third, G. S. Lawson; fourth, Frank Morrill & Co.; fifth, E. C. Stone.

Get of Sire—First, E. C. Stone; second, W. J. Brinigar; third, Frank Morrill & Co.; fourth, E. C. Stone; fifth, G. S. Lawson.

Produce of Sow—First, W. J. Brinigar; second, E. C. Stone; third, E. C. Stone; fourth, G. S. Lawson; fifth, Frank Morrill & Co.

Champion Board, Any Age—E. C. Stone.

Champion Sow, Any Age—W. J. Brinigar.

Champion Boar, Any Age, Bred by Exhibitor—E. C. Stone.

Champion Sow Any Age, Bred by Exhibitor—Frank Morrill & Co.

SHEEP DEPARTMENT.

SUPERINTENDENT.................H. L. PIKE, Whiting, Iowa.

MERINOS, AMERICAN, SPANISH OR DELAINE.

EXHIBITORS.

E. M. Moore, Wixom, Michigan; Uriah Cook & Sons, Peoria, Illinois.

AWARDS.

JUDGE....................W. S. DIXON, Brandon, Wisconsin.

Ram Two Years Old or Over—First, E. M. Moore; second, Uriah Cook & Sons; third, Uriah Cook & Sons.

Ram One Year Old and Under Two—First and second, Uriah Cook & Sons; third, E. M. Moore.

Ewe Two Years Old or Over—First, Uriah Cook & Sons; second, E. M. Moore; third Uriah Cook & Sons.

Ewe One Year Old and Under Two—First and second, Uriah Cook & Sons; third, E. M. Moore.

Ewe Lamb—First and second, Uriah Cook & Sons; third, E. M. Moore.

Get of Sire—First, Uriah Cook & Sons; second, E. M. Moore.

Flock—First, Uriah Cook & Sons; second, E. M. Moore.

Champion Pure Bred Ram, Any Age—E. M. Moore.

Champion Pure Bred Ewe, Any Age—Uriah Cook & Sons.

RAMBOILLET.

EXHIBITORS.

E. M. Moore, Wixom, Michigan; Max Chapman, Marysville, Ohio.

AWARDS.

JUDGE ....W. S. DIXON, Brandon, Wis.

Ram Two Years Old or Over—First, E. M. Moore; second and third, Max Chapman.

Ram One Year Old and Under Two—First, Max Chapman; second and third, E. M. Moore.

Ram Lamb—First and second, E. M. Moore; third, Max Chapman.

Ewe Two Years Old or Over—First, E. M. Moore; second, Max Chapman; third E. M. Moore.

Ewe One Year Old and Under Two—First, E. M. Moore; second, Max Chapman; third, E. M. Moore.

Ewe Lamb—First, Max Chapman; second, E. M. Moore; third, Max Chapman.

Get of Sire—First, E. M. Moore; second, Max Chapman.

Flock—First, E. M. Moore; second, Max Chapman.

Champion Pure Bred Ram, Any Age—E. M. Moore.

Champion Pure Bred Ewe, Any Age—E. M. Moore.

COTSWOLDS.

EXHIBITORS.

F. W. Harding, Waukesha, Wisconsin; Lewis Bros., Camp Point, Illinois.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ram One Year Old and Under Two—First and second, F. W. Harding; third, Lewis Bros.

Ram Lamb—First and second, Lewis Bros.; third, F. W. Harding.

Ewe Two Years Old or Over—First and second, Lewis Bros.; third, F. W. Harding.

Ewe One Year Old and Under Two—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ewe Lamb—First and second, F. W. Harding; third, Lewis Bros.

Get of Sire—First, F. W. Harding; second, Lewis Bros.

Flock—First, F. W. Harding; second, Lewis Bros.

Champion Pure Bred Ram, Any Age—F. W. Harding.

Champion Pure Bred Ewe, Any Age—F. W. Harding.

LINCOLNS.

EXHIBITORS.

Alex W. Arnold, Galesville, Wisconsin.

AWARDS.

JUDGE.....................W. S. DIXON, Brandon, Wisconsin.

Ram Two Years Old or Over—First and second, Alex W. Arnold.

Ram One Year Old and Under Two—First and second, Alex W. Arnold.

Ram Lamb—First and Second, Alex W. Arnold.

Ewe Two Years Old or over—First and second, Alex W. Arnold.

Ewe One Year Old and Under Two—First and second, Alex W. Arnold.

Ewe Lamb—First and second, Alex W. Arnold.

Get of Sire—First, Alex W. Arnold.

Flock—First, Alex W. Arnold.

Champion Pure Bred Ram, Any Age—Alex W. Arnold.

Champion Pure Bred Ewe, Any Age—Alex W. Arnold.

HAMPSHIRE DOWNS.

EXHIBITORS.

F. W. Harding, Waukesha, Wisconsin; Renk Bros., Sun Prairie, Wisconsin; W. W. Waltwmire, Peculiar, Missouri; Alex W. Arnold, Galesville, Wisconsin.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First and second, F. H. Harding; third, Renk Brothers.

Ram One Year Old and Under Two—First, Renk Bros.; second, F. W. Harding.

Ram Lamb—First, Renk Bros.; second and third, F. W. Harding.

Ewe Two Years Old or Over—First, F. W. Harding; second and third, Renk Brothers.

Ewe One Year Old and Under Two—First and second, F. W. Harding; third, Renk Bros.

Ewe Lamb—First and second, Renk Bros; third, F. W. Harding.

Get of Sire—First, F. W. Harding; second, Renk Brothers.

Flock—First, F. W. Harding; second, Renk Bros.

Champion Pure Bred Ram, Any Age—Renk Bros.

Champion Pure Bred Ewe, Any Age—F. W. Harding.

SHROPSHIRES.

EXHIBITORS.

Chandler Brothers, Chariton, Iowa; Elmendorf Farm, Lexington, Kentucky; R. F. & W. M. Fantz, Pleasant Hill, Missouri; Kaufman Brothers, Moscow, Iowa; Renk Brothers, Sun Prairie, Wisconsin; Geo. McKerrow & Sons, Pewaukee, Wisconsin; O. H. Peasley & Sons, Indianola, Ia.; J. W. Fawcett & Son, Springdale, Iowa.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Elmendorf Farm; second, Renk Bros.; third, Chandler Brothers; fourth, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First, Elmendorf Farm; second, Geo. McKerrow & Sons; third, Chandler Bros.; fourth, Elmendorf Farm.

Ram Lamb—First and second, Chandler Bros.; third, Elmendorf Farm; fourth, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First, Chandler Bros.; second, Geo. McKerrow & Sons; third, Elmendorf Farm; fourth, Geo. McKerrow & Sons.

Ewe One Year Old and Under Two—First, Chandler Bros.; second, Geo. McKerrow & Sons; third, Chandler Bros.; fourth, Geo. McKerrow & Sons.

Ewe Lamb—First and second, Chandler Bros.; third, Geo. McKerrow & Sons; fourth, Renk Bros.

Group of Rams—First, Chandler Bros.; second, Renk Bros.

Get of Sire—First, O. H. Peasley & Sons; second, J. W. Fawcett & Sons.

Flock—First, Chandler Bros.; second, Geo. McKerrow & Sons.

Champion Pure Bred Ram, Any Age—Elmendorf Farm.

Champion Pure Bred Ewe, Any Age—Chandler Bros.

SPECIAL PREMIUMS OFFERED BY THE AMERICAN SHROPSHIRE REGISTRY ASSOCIATION.

Ram Two Years Old or Over—First, J. W. Fawcett & Son; second, W. A. Taylor & Son; third, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First, Geo. McKerrow & Sons; second, O. H. Peasley & Sons; third, J. W. Fawcett & Son.

Ram Lamb—First, O. H. Peasley & Sons; second, W. A. Taylor & Son; third, Kaufman Bros.

Ewe Two Years Old or Over—First, Chandler Bros.; second, Kaufman Bros.; third, J. W. Fawcett & Son.

Ewe One Year Old and Under Two—First, Chandler Bros.; second, R. F. & W. M. Fantz; third, R. F. & W. M. Fantz.

Ewe Lamb—First, Chandler Bros.; second and third, J. W. Fawcett & Son.

Champion Ram, Any Age—O. H. Peasley & Sons.

Champion Ewe, Any Age—Chandler Bros.

Get of Sire—First, J. W. Fawcett & Son, second, O. H. Peasley & Sons.

Flock—First, R. F. & W. F. Fantz; second, O. H. Peasley & Sons; third, J. W. Fawcett & Son.

IOWA SHROPSHIRES.

EXHIBITORS.

Chandler Bros., Chariton, Iowa; C. W. Chandler, Kellerton, Iowa; W. L. Farmer, Indianola, Iowa; J. W. Fawcett & Son, Springdale, Iowa; Kaufman Bros., Moscow, Iowa; B. T. Nunamaker, Indianola, Iowa; J. L. Plumly, Robins, Iowa; O. H. Peasley & Sons, Indianola, Iowa; J. A. Taylor, Ames, Iowa; W. A. Taylor & Son, Ames, Iowa; C. J. Wilkinson, Colfax, Iowa.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, J. W. Fawcett & Son; second, Chandler Bros.; third, O. H. Peasley & Son; fourth, Chandler Bros.; fifth, J. L. Plumly.

Ram One Year Old and Under Two—First, O. H. Peasley & Son; second, J. W. Fawcett & Son; third, J. W. Fawcett; fourth, Chandler Bros.; fifth, W. A. Taylor & Son.

Ram Lamb—First, O. H. Peasley & Sons; second, W. A. Taylor; third, Kaufman Bros.; fourth, W. A. Taylor & Son; fifth, J. W. Fawcett & Son.

Ewe Two Years Old or Over—First, Chandler Bros.; second, J. W. Fawcett & Son; third, Chandler Bros.; fourth, Kaufman Bros.; fifth, W. A. Taylor & Son.

Ewe One Year Old and Under Two—First, Chandler Bros.; second, O. H. Peasley & Son; third, W. A. Taylor & Son; fourth, W. A. Taylor & Son; fifth, J. L. Plumly.

Ewe Lamb—First, Chandler Bros.; second, J. W. Fawcett & Son; third, J. W. Fawcett & Son; fourth, O. H. Peasley & Sons; fifth, Kaufman Bros.

Group of Rams—First, Chandler Bros.; second, J. W. Fawcett & Son.

Get of Sire—First, J. W. Fawcett & Son; second, W. A. Taylor & Son; third, Kaufman Bros.

Flock—First, Chandler Bros.; second, O. H. Peasley & Sons; third, W. A. Taylor & Son.

Champion Ram, Any Age—O. H. Peasley & Sons.

Champion Ewe, Any Age—Chandler Bros.

OXFORD DOWNS.

EXHIBITORS.

Alex W. Arnold, Galesville, Wisconsin; J. L. Baldwin, Osceola, Iowa; John Graham & Son, Eldora, Iowa; C. S. Hechtner, Chariton, Iowa; Geo. McKerrow & Sons, Pewaukee, Wisconsin; W. W. Waltmire, Peculiar, Missouri; J. E. Woodall, Atlantic, Iowa.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons; third, John Graham & Son.

Ram One Year Old and Under Two—First, C. S. Hechtner; second and third, Geo. McKerrow & Sons.

Ram Lamb—First and second, Geo. McKerrow & Sons; third, C. S. Hechtner.

Ewe Two Years Old or Over—First, C. S. Hechtner; second and third, Geo. McKerrow & Sons.

Ewe One Year Old and Under Two—First, Geo. McKerrow & Sons; second, C. S. Hechtner; third, Geo. McKerrow & Sons.

Ewe Lamb—First, C. S. Hechtner; second and third, Geo. McKerrow & Sons.

Get of Sire—First, John Graham & Son.

Flock—First, C. S. Hechtner; second, Geo. McKerrow & Sons.

Champion Pure Bred Ram, Any Age—Geo. McKerrow & Sons.

Champion Pure Bred Ewe, Any Age—Geo. McKerrow & Sons.

SPECIAL PREMIUMS OFFERED BY THE AMERICAN OXFORD RECORD ASSOCIATION.

AWARDS.

Best Yearling Ram—First and second, John Graham & Son.

Best Yearling Ewe—First, C. S. Hechtner; second, John Graham & Son.

Best Pen of Four Lambs, Either Sex—First, John Graham & Son.

IOWA OXFORD DOWNS.

EXHIBITORS.

J. L. Baldwin, Osceola, Iowa; John Graham & Son, Eldora, Iowa; C. S. Hechtner, Chariton, Iowa; J. E. Woodall, Atlantic, Iowa.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, John Graham & Son; second, C. S. Hechtner.

Ram One Year Old and Under Two—First, second, and third, John Graham & Son.

Ram Lamb—First, C. S. Hechtner; second, John Graham & Son; third, C. S. Hechtner.

Ewe Two Years Old or Over—First, C. S. Hechtner; second and third, John Graham & Son.

Ewe One Year Old and Under Two—First, C. S. Hechtner; second and third, John Graham & Son.

Ewe Lamb—First and second, John Graham & Son; third, C. S. Hechtner.

Get of Sire—First, John Graham & Son.

Flock—First, John Graham & Son; second, C. S. Hechtner.

Champion Ram, Any Age—John Graham & Son.

Champion Ewe, Any Age—C. S. Hechtner.

SOUTH DOWNS.

EXHIBITORS.

R. P. Hite, Gallatin, Tennessee; Geo. McKerrow & Sons, Pewaukee, Wisconsin.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, R. P. Hite; second, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First, Geo. McKerrow & Sons; second, R. P. Hite.

Ram Lamb—First, R. P. Hite; second, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First, Geo. McKerrow & Sons; second, R. P. Hite.

Ewe One Year Old and Under Two—First, Geo. McKerrow & Son; second, R. P. Hite.

Ewe Lamb—First, Geo. McKerrow & Sons; second, R. P. Hite.

Flock—First, Geo. McKerrow & Sons; second, R. P. Hite.

Champion Pure Bred Ram, Any Age—Geo. McKerrow & Sons.

Champion Pure Bred Ewe, Any Age—Geo. McKerrow & Sons.

DORSETS.

EXHIBITORS.

James Brown, Chicago, Illinois; Nash Bros.; Tipton, Indiana; Spring Brook Stock Farm, Arlington Heights, Illinois; Harry H. Wheeler, Elburn, Illinois.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, James Brown; second, Nash Bros.; third, Harry H. Wheeler.

Ram One Year Old and Under Two First, Nash Bros.; second, James Brown.

Ram Lamb—First, James Brown; second and third, Nash Bros.

Ewe Two Years Old or Over—First and second, James Brown; third, Nash Bros.

Ewe One Year Old and Under Two—First, Nash Bros.; second and third, James Brown.

Ewe Lamb—First, James Brown; second, Nash Bros.; third, James Brown.

Get of Sire—First, Nash Bros.; second, Harry H. Wheeler.

Flock—First, James Brown; second, Nash Bros.

Champion Pure Bred Ram, any Age—Nash Bros.

Champion Pure Bred Ewe, Any Age—Nash Bros.

CHEVIOTS.

EXHIBITORS.

Alex W. Arnold, Galesville, Wisconsin; Geo. W. Parnell, Wingate, Indiana.

AWARDS.

JUDGE ....W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First and second, Geo. W. Parnell; third, Alex W. Arnold.

Ram One Year Old and Under Two—First, Alex W. Arnold, second, and third, Geo. W. Parnell.

Ram Lamb—First and second, Geo. W. Parnell; third, Alex W. Arnold

Ewe Two Years Old or Over—First and second, Geo. W. Parnell.

Ewe One Year Old and Under Two—First and second, Geo. W. Parnell.

Ewe Lamb—First and second, Geo. W. Parnell; third, Alex W. Arnold.

Get of Sire—First, Geo. W. Parnell; second, Alex W. Arnold.

Flock—First, Geo. W. Parnell.

Champion Pure Bred Ram, Any Age—Geo. W. Parnell.

Champion Pure Bred Ewe, Any Age—Geo. W. Parnell.

POULTRY DEPARTMENT.

SUPERINTENDENT ....**H. L. PIKE, Whiting, Iowa.**

AMERICANS.

EXHIBITORS.

C. A. Adams, Packwood, Iowa; A. L. Anderson, Indianola, Iowa; Mrs. N. B. Ashby, Des Moines, Iowa; Don G. Berry, Indianola, Iowa; Dr. Thos. P. Bond, Des Moines, Iowa; Buck Brothers, Prairie City, Iowa; Wib F. Clements, Agency, Iowa; F. Gage Cutler, Carthage, Illinois; Joseph Dagle, Richmond, Iowa; C. J. Eden, Manning, Iowa; F. M. Finkbine, Des Moines, Iowa; W. A. Hartman, Winterset, Iowa; F. H. Hollway, Lytton, Iowa; L. & E. Hanson & Company, Dean, Iowa; C. M. Hoode, Des Moines, Iowa; Hunkydory Farm, Pella, Iowa; F. W. Johnson, Luther, Iowa; C. A. Kenworthy, Des Moines, Iowa; Dr. W. A. Marner, Miles, Iowa; B. Mansfield, Altoona, Iowa; J. T. Perry, Selma, Iowa; Walter Perkins, Ames, Iowa; N. A. Ranck, Niota, Illinois; E. G. Roberts, Ft. Atkinson, Wisconsin; J. S. Shannon, Sac City, Iowa; G. W. Stout, Rose Hill, Iowa; A. Stocker, Des Moines, Iowa; F. F. & V. G. Warner, Bloomfield, Iowa; W. B. Wilson, Delta, Iowa; Charles E. Wayman, Carlisle, Iowa; Nash Brothers, Tipton, Indiana; E. B. Cramblit, Ames, Iowa.

AWARDS.

JUDGE ....**W. S. RUSSELL, Ottumwa, Iowa.**

Barred Plymouth Rock Cock—First, E. G. Roberts; second, J. S. Shannon; third, W. B. Wilson.

Barred Plymouth Rock Cockerel—First, J. S. Shannon; second, E. G. Roberts; third, E. G. Roberts.

Barred Plymouth Rock Hen—First, E. G. Roberts; second, W. A. Hartman; third, E. G. Roberts.

Barred Plymouth Rock Pullet—First, W. B. Wilson; second, J. S. Shannon; third, G. W. Stout.

White Plymouth Rock Cock—First, J. T. Perry; second, F. H. Hollway; third, F. H. Hollway.

White Plymouth Rock Cockerel—First, F. H. Hollway; second, F. H. Hollway; third, Walter Perkins.

White Plymouth Rock Hen—First, Chas. E. Wayman; second, F. Gage Cutler; third, F. Gage Cutler.

White Plymouth Rock Pullet—First, W. H. Hollway; second, W. H. Hollway; third, Hunkydory Farm.

Buff Plymouth Rock Cockerel—First, Joseph Dagle; second, C. M. Hoode; third, Joseph Dagle.

Buff Plymouth Rock Hen—First, E. G. Roberts; second, Joseph Dagle.

Buff Plymouth Rock Pullet—First, C. M. Hoode; second, C. A. Adams; third, C. M. Hoode.

Partridge Plymouth Rock Cock—First, E. G. Roberts.

Partridge Plymouth Rock Hen—First, E. G. Roberts; second, L. & E. Hanson & Company; third, L. & E. Hanson & Company.

Partridge Plymouth Rock Pullet—Second, E. G. Roberts.

Silver Wyandotte Cock—First and second, C. J. Eden; third, F. W. Johnson.

Silver Wyandotte Cockerel—First, F. F. & V. G. Warner; second, F. F. & V. G. Warner; third, Dr. W. A. Marner.

Silver Wyandotte Hen—First, Walter Perkins; second, E. G. Roberts; third, F. F. & V. G. Warner.

Silver Wyandotte Pullet—First, Dr. W. A. Marner; second, Dr. W .A. Marner; third, F. F. & V. G. Warner.

Golden Wyandotte Cock—First, A. L. Anderson; second, E. G. Roberts; third, F. F. & V. G. Warner.

Golden Wyandotte Cockerel—First, F. F. & V. G. Warner; second, F. F. & V. G. Warner.

Golden Wyandotte Hen—First, A. L. Anderson; second, F. F. & V. G. Warner; third, A. L. Anderson.

Golden Wyandotte Pullet—First, A. L. Anderson; second, A. L. Anderson; third, F. F. & V. G. Warner.

White Wyandotte Cock—First, Dr. Thos. P. Bond; second, A. Stocker; third, E. G. Roberts.

White Wyandotte Cockerel—First, Dr. Thos. P. Bond; second, Dr. Thos. P. Bond; third, B. Mansfield.

White Wyandotte Hen First, Dr. Thos. P. Bond; second, E. G. Roberts; third, Mrs. N. B. Ashby.

White Wyandotte Pullet—First, Dr. Thos. P. Bond; second, Mrs. N. B. Ashby; third, Mrs. N. B. Ashby.

Buff Wyandotte Cock—First, A. L. Anderson; second, A. L. Anderson; third, F. F. & V. G. Warner.

Buff Wyandotte Cockerel—First, A. L. Anderson; second, A. L. Anderson; third, E. G. Roberts.

Buff Wyandotte Hen—First, F. F. & V. G. Warner; second, A. L. Anderson; third, E. G. Roberts.

Buff Wyandotte Pullet—Second, E. G. Roberts.

Black Wyandotte Cock—First, E. G. Roberts.

Black Wyandotte Cockerel—First, E. G. Roberts; second, E. G. Roberts.

Black Wyandotte Hen—First, Buck Brothers; second, E. G. Roberts; third, Buck Brothers.

Black Wyandotte Pullet—First, E. G. Roberts; second, E. G. Roberts; third, Buck Brothers.

Partridge Wyandotte Cock—First, E. G. Roberts; second, Don G. Berry; third, F. F. & V. G. Warner.

Partridge Wyandotte Cockerel—First, F. F. & V. G. Warner; second, F. F. & V. G. Warner.

Partridge Wyandotte Hen—First, F. F. & V. G. Warner; second, E. G. Roberts; third, Don G. Berry.

Partridge Wyandotte Pullet—First, F. F. & V. G. Warner; second, Don G. Berry; third, Don G. Berry.

Silver Penciled Wyandotte Cock—First, F. F. & V. G. Warner; second, E. G. Roberts.

Silver Penciled Wyandotte Cockerel—First, E. G. Roberts.

Silver Penciled Wyandotte Hen—First, E. G. Roberts; second, F. F. & V. G. Warner; third, F. F. & V. G. Warner.

Silver Penciled Wyandotte Pullet—First, F. F. & V. G. Warner; second, F. F. & V. G. Warner.

Columbian Wyandotte Cockerel—First, M. C. Miller.

Black Java Cock—First, E. G. Roberts.

Black Java Cockerel—First, E. G. Roberts; second, Buck Brothers.

Black Java Hen—First, E. G. Roberts; second, Buck Brothers; third, Buck Brothers.

Black Java Pullet—First, E. G. Roberts; second, Buck Brothers; third, Buck Brothers.

Mottled Java Cockerel—First, E. G. Roberts.

Mottled Java Hen—First, E. G. Roberts.

Mottled Java Pullet—First, E. G. Roberts.

Rose Comb Dominique Cock—First, E. G. Roberts.

Rose Comb Dominique Cockerel—First, E. G. Roberts.

Rose Comb Dominique Pullet—First, E. G. Roberts.

S. C. Rhode Island Red Cock—First, E. G. Roberts; second, Nash Brothers; third, F. M. Finkbine.

S. C. Rhode Island Red Cockerel—First, C. A. Kenworthy; second, W. F. Clements; third, W. F. Clements.

S. C. Rhode Island Red Hen—First, E. B. Cramblit; second; F. M. Finkbine.

S. C. Rhode Island Red Pullet—First, C. A. Kenworthy; second, W. F. Clements; third, W. F. Clements.

R. C. Rhode Island Red Cock—First, E. G. Roberts; second, D. W. Rich; third, N. A. Ranck.

R. C. Rhode Island Red Cockerel—First, N. A. Ranck; second, D. W. Rich; third, W. F. Clements.

R. C. Rhode Island Red Hen—First, E. G. Roberts; second, D. W. Rich; third, D. W. Rich.

R. C. Rhode Island Red Pullet—First, D. W. Rich; second, D. W. Rich; third, D. W. Rich.

Pea Comb Buckeye Hen—First, F. Gage Cutler; second, F. Gage Cutler.

ASIATICS.

EXHIBITORS.

Mrs. E. M. Brinckler, Stuart, Iowa; Buck Brothers, Prairie City, Iowa; W. F. Clements, Agency, Iowa; Margaret E. Daly, Anamosa, Iowa; Weir Hart, Bondurant, Iowa; L. & E. Hanson & Company, Dean, Iowa; F. W. Johnson, Luther, Iowa; Mrs. Lizzie M. McCleary, Altoona, Iowa; R. G.

McDuff, Monroe, Iowa; Walter Perkins, Ames, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; R. E. West, Altoona, Iowa; T. H. West, Mitchellville, Iowa.

AWARDS.

JUDGE ....FRED SHELLABARGER, West Liberty, Iowa.

Light Brahma Cockerel—First, Weir Hart; second, Weir Hart.

Light Brahma Hen—First, L. & E. Hanson & Company; second, Weir Hart.

Light Brahma Pullet—First and second, Weir Hart.

Dark Brahma Cock—First, E. G. Roberts.

Dark Brahma Hen—First, E. G. Roberts.

Buff Cochin Cock—First, E. G. Roberts; second, F. W. Johnson; third, L. & E. Hanson & Co.

Buff Cochin Cockerel—First, E. G. Roberts; second, F. W. Johnson.

Buff Cochin Hen—First, E. G. Roberts; second, F. W. Johnson; third, L. & E. Hanson & Company.

Buff Cochin Pullet—First, E. G. Roberts.

Partridge Cochin Cockerel—First, Mrs. E. M. Brinckler; second, E. G. Roberts.

Partridge Cochin Hen—First, E. G. Roberts.

Partridge Cochin Pullet—First, E. G. Roberts; second, Mrs. E. M. Brinckler.

White Cochin Cock—First, E. G. Roberts.

White Cochin Hen—First, E. G. Roberts.

Black Cochin Cock—First, E. G. Roberts.

Black Cochin Hen—First, E. G. Roberts; second, Buck Bros.

Black Langshan Cock—First, R. G. McDuff; second, W. F. Clements; third, Mrs. Lizzie M. McCleary.

Black Langshan Cockerel—First and second, Mrs. Lizzie M. McCleary; third, R. G. McDuff.

Black Langshan Hen—First, Margaret E. Daly; second, Walter Perkins; third, R. E. West.

Black Langshan Pullet—First and second, Margaret E. Daly; third, Walter Perkins.

White Langshan Cock—First, T. H. West; second, W. F. Clements; third, L. & E. Hanson & Company.

White Langshan Cockerel—First and second, T. H. West.

White Langshan Hen—First, T. H. West; second, L. & E. Hanson & Company; third, T. H. West.

White Langshan Pullet—First and second, T. H. West; third, Weir Hart.

MEDITERRANEANS.

EXHIBITORS.

Barker Brothers, Indianola, Iowa; Mrs. H. E. Blattler, Solon, Iowa; Buck Brothers, Prairie City, Iowa; W. O. Coon, Des Moines, Iowa; F. M. Finkbine, Des Moines, Iowa; Hardessen Brothers, Des Moines, Iowa; Charles E. Hines, Des Moines, Iowa; F. W. Johnson, Luther, Iowa; Will

Michael, Selma, Iowa; B. Mansfield, Altoona, Iowa; Lew Nelson, Britt, Iowa; P. W. Pitt, Belle Plaine, Iowa; J. T. Perry, Selma, Iowa; Walter Perkins, Ames, Iowa; John D. Reeler, Mason City, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; N. A. Ranck, Niota, Illinois; A. Stocker, Des Moines, Iowa.

AWARDS.

JUDGE ....W. S. RUSSELL, Ottumwa, Iowa.

S. C. Brown Leghorn Cock—First, F. W. Johnson; second and third, E. G. Roberts.

S. C. Brown Leghorn Cockerel—First, E. G. Roberts; second, W. O. Coon; third, Will Michael.

S. C. Brown Leghorn Hen—First, P. W. Pitt; second, Will Michael; third, W. O. Coon.

S. C. Brown Leghorn Pullet—First, P. W. Pitt; second, Will Michael; third, F. W. Johnson.

R. C. Brown Leghorn Cock—First, E. G. Roberts; second, Will Michael; third, Buck Brothers.

R. C. Brown Leghorn Cockerel—B. Mansfield; second, B. Mansfield; third, Hardessen Bros.

R. C. Brown Leghorn Hen—First, E. G. Roberts; second, Will Michael; third, J. T. Perry.

R. C. Brown Leghorn Pullet—First, second, and third, B. Mansfield.

S. C. White Leghorn Cock—First, E. G. Roberts; second, Walter Perkins; third, Barker Bros.

S. C. White Leghorn Cockerel—First, A. Stocker; second, Walter Perkins; third, Barker Bros.

S. C. White Leghorn Hen—First, W. M. Shaw & Co.; second, F. M. Finkbine; third, Barker Bros.

S. C. White Leghorn Pullet—First, E. G. Roberts; second, Walter Perkins; third, Barker Bros.

R. C. White Leghorn Cock—First, E. G. Roberts; second, John D. Reeler.

R. C. White Leghorn Cockerel—First and second, Lew Nelson; third, John D. Reeler.

R. C. White Leghorn Hen—First, Buck Bros.; second, John D. Reeler; third, E. G. Roberts.

R. C. White Leghorn Pullet—First, second and third, Lew Nelson.

S. C. Buff Leghorn Cock—First, E. G. Roberts; second, L. & E. Hanson & Company; third, Charles E. Hines.

S. C. Buff Leghorn Cockerel—First and second, N. A. Ranck; third, E. G. Roberts.

S. C. Buff Leghorn Hen—First and second, Charles E. Hines; third, L. & E. Hanson & Company.

S. C. Buff Leghorn Pullet—First, E. G. Roberts; second and third, L. & E. Hanson & Company.

S. C. Black Leghorn Cock—First, E. G. Roberts.

S. C. Black Leghorn Cockerel—First, E. G. Roberts.

S. C. Black Leghorn Hen—First, E. G. Roberts.

S. C. Black Leghorn Pullet—First, E. G. Roberts.

S. C. Black Minorcas Cock—First, E. G. Roberts.

S. C. Black Minorcas Cockerel—First, E. G. Roberts.

S. C. Black Minorcas Hen—First, E. G. Roberts.

S. C. Black Minorcas Pullet—First, E. G. Roberts.

R. C. Black Minorcas Cock—First, E. G. Roberts.

R. C. Black Minorcas Cockerel—First and second, Mrs. E. M. Blattler; third, E. G. Roberts.

R. C. Black Minorcas Hen—First, E. G. Roberts.

R. C. Black Minorcas Pullet—First and second, Mrs. E. M. Blattler; third, E. G. Roberts.

S. C. White Minorcas Cock—First, E. G. Roberts.

S. C. White Minorcas Cockerel—First, E. G. Roberts.

S. C. White Minorcas Hen—First, E. G. Roberts.

S. C. White Minorcas Pullet—First, E. G. Roberts.

White Faced Black Spanish Cock—First, E. G. Roberts.

White Faced Black Spanish Cockerel—First, E. G. Roberts.

White Faced Black Spanish Hen—First, E. G. Roberts.

White Faced Black Spanish Pullet—First, E. G. Roberts, second, L. & E. Hanson & Co.

Blue Andalusian Cock—First, E. G. Roberts.

Blue Andalusian Cockerel—First, E. G. Roberts.

Blue Andalusian Hen—First, E. G. Roberts.

Blue Andalusian Pullet—First, E. G. Roberts.

Mottled Anconas Cock—First, E. G. Roberts.

Mottled Anconas Cockerel—First, L. & E. Hanson & Company; second, E. G. Roberts.

Mottled Anconas Hen—First, E. G. Roberts.

Mottled Anconas Pullet—First and second, L. & E. Hanson & Co.; third, E. G. Roberts.

ENGLISH.

EXHIBITORS.

Francis Dorrell, Luther, Iowa; Dr. M. M. Evans, LeGrand, Iowa; A. H. Retsloff, Winterset, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; Sunlight Poultry Yards, Dumont, Iowa; W. B. Wilson, Delta, Iowa.

AWARDS.

JUDGE ....W. S. RUSSELL, Ottumwa, Iowa.

White Dorking Cock—First, E. G. Roberts.

White Dorking Hen—First, E. G. Roberts.

Silver Gray Dorking Cock—First, E. G. Roberts.

Silver Gray Dorking Hen—First, E. G. Roberts.

Colored Dorking Cock—First, E. G. Roberts.

Colored Dorking Hen—First, E. G. Roberts.

S. C. Buff Orpington Cock—First, second and third, Sun Light Poultry Yards.

S. C. Buff Orpington Cockerel—First, second and third, Sun Light Poultry Yards.

S. C. Buff Orpington Pullet—First, second and third, Sun Light Poultry Yards.

S. C. Buff Orpington Hen—First, second and third, Sun Light Poultry Yards.

S. C. Black Orpington Cock—First, Dr. M. M. Evans; second, E. G. Roberts.

S. C. Black Orpington Hen—First and second, Dr. M. M. Evans; third, E. G. Roberts.

S. C. White Orpington Cock—First, A. H. Retsloff; second, Francis Dorrell.

S. C. White Orpington Cockerel—First, A. H. Retsloff; second and third, W. B. Wilson.

S. C. White Orpington Hen—First and second, A. H. Retsloff; third, Dr. M. M. Evans.

S. C. White Orpington Pullet—First, second and third, W. B. Wilson.

POLISH.

EXHIBITORS.

E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

JUDGE...............FRED SHELLABARGER, West Liberty, Iowa.

White Crested Black Polish Cock—First, E. G. Roberts.
White Crested Black Polish Cockerel—First, E. G. Roberts.
White Crested Black Polish Hen—First E. G. Roberts.
White Crested Black Polish Pullet—First E. G. Roberts.
Bearded Golden Polish Cock—First, E. G. Roberts.
Bearded Golden Polish Cockerel—First, E. G. Roberts.
Bearded Golden Polish Hen—First, E. G. Roberts.
Bearded Golden Polish Pullet—First, E. G. Roberts.
Bearded Silver Polish Cock—First, E. G. Roberts.
Bearded Silver Polish Hen—First, E. G. Roberts.
Bearded Silver Polish Cockerel—First, E. G. Roberts.
Bearded Silver Polish Pullet—First E. G. Roberts.
Bearded White Polish Cock—First, E. G. Roberts.
Bearded White Polish Cockerel—First, ———
Bearded White Polish Hen—First, E. G. Roberts.
Buff Laced Polish Cock—First, E. G. Roberts.
Buff Laced Polish Cockerel—First, E. G. Roberts.
Buff Laced Polish Hen—First, E. G. Roberts.
Buff Laced Polish Pullet—First, E. G. Roberts.
Non-Bearded Golden Polish Cock—First, E. G. Roberts.
Non-Bearded Golden Polish Cockerel—First, E. G. Roberts.
Non-Bearded Golden Polish Hen—First, E. G. Roberts.
Non-Bearded Golden Polish Pullet—First, E. G. Roberts.
Non-Bearded Silver Polish Cock—First, E. G. Roberts.
Non-Bearded Silver Polish Cockerel—First, E. G. Roberts.

Non-Bearded Silver Polish Hen—First, E. G. Roberts.
Non-bearded Silver Polish Pullet—First, E. G. Roberts.
Non-Bearded White Polish Cock—First, E. G. Roberts.
Non-Bearded White Polish Hen—First, E. G. Roberts.
Non-Bearded White Polish Pullet—First, E. G. Roberts.

DUTCH.

EXHIBITORS.

E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

JUDGE..............FRED SHELLABARGER, West Liberty, Iowa.

G. S. Hamburg Cock—First, E. G. Roberts.
G. S. Hamburg Cockerel—First, E. G. Roberts
G. S. Hamburg Hen—First, E. G. Roberts.
G. S. Hamburg Pullet—First, E. G. Roberts.
S. S. Hamburg Cock—First, E. G. Roberts.
S. S. Hamburg Cockerel—First, E. G. Roberts.
S. S. Hamburg Hen—First, E. G. Roberts.
S. S. Hamburg Pullet—First, E. G. Roberts.
Golden Penciled Hamburg Cock—First, E. G. Roberts.
Golden Penciled Hamburg Cockerel—First, E. G. Roberts.
Golden Penciled Hamburg Hen—First, E. G. Roberts.
Golden Penciled Hamburg Pullet—First, E. G. Roberts.
Silver Penciled Hamburg Cock—First, E. G. Roberts.
Silver Penciled Hamburg Cockerel—First, E. G. Roberts.
Silver Penciled Hamburg Hen—First, E. G. Roberts.
Silver Penciled Hamburg Pullet—First, E. G. Roberts.
White Hamburg Cock—First, E. G. Roberts.
White Hamburg Cockerel—First, E. G. Roberts.
White Hamburg Hen—First, E. G. Roberts.
Black Hamburg Cock—First, E. G. Roberts.
Black Hamburg Hen—First, E. G. Roberts.

FRENCH.

EXHIBITORS.

L. & E. Hanson & Company, Dean, Iowa; Dr. Thomas P. Bond, Des Moines, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

JUDGE..............FRED SHELLABARGER, West Liberty, Iowa.

Mottled Houdan Cock—First, E. G. Roberts; second, L. & E. Hanson and Company.

Mottled Houdan Cockerel—First, E. G. Roberts.

Mottled Houdan Hen—First, Dr. Thos. P. Bond; second, E. G. Roberts; third, L. & E. Hanson & Company.

Mottled Houdan Pullet—First, E. G. Roberts.
Black Crevecoeurs Cock—First, E. G. Roberts.
Black Crevecoeurs Cockerel—First, E. G. Roberts.
Black Crevecoeurs Hen—First, E. G. Roberts.
Black Crevecoeurs Pullet—First, E. G. Roberts.
Black La Fleche Cock—First, E. G. Roberts.
Black La Fleche Hen—First, E. G. Roberts.

GAMES AND GAME BANTAMS.

EXHIBITORS.

Buck Bros., Prairie City, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

JUDGE.............FRED SHELLABARGER, West Liberty, Iowa.

B. B. Red Game Cock—First, E. G. Roberts.
B. B. Red Game Hen—First, E. G. Roberts.
B. B. Red Game Pullet—First, E. G. Roberts.
Golden Duckwing Game Cock—First, E. G. Roberts.
Golden Duckwing Game Cockerel—First, E. G. Roberts.
Golden Duckwing Game Hen—First, E. G. Roberts.
Silver Duckwing Game Cock—First, E. G. Roberts.
Silver Duckwing Game Hen—First, E. G. Roberts.
Red Pyle Game Cockerel—First Buck Bros.
Red Pyle Game Hen—First, E. G. Roberts.
Red Pyle Game Pullet—First, Buck Bros.
White Game Hen—First, E. G. Roberts.
Black Game Cock—First, E. G. Roberts.
Black Game Hen—First, E. G. Roberts.
B. B. Red Game Bantam Cock—First, E. G. Roberts.
B. B. Red Game Bantam Cockerel—First, E. G. Roberts.
B. B. Red Game Bantam Hen—First, E. G. Roberts.
B. B. Red Game Bantam Pullet—First, E. G. Roberts.
Brown Red Game Bantam Cock—First, E. G. Roberts.
Brown Red Game Bantam Cockerel—First, E. G. Roberts.
Brown Red Game Bantam Hen—First, E. G. Roberts.
Brown Red Game Bantam Pullet—First, E. G. Roberts.
Golden Duckwing Game Bantam Cock—First, E. G. Roberts.
Golden Duckwing Game Bantam Cockerel—First, E. G. Roberts.
Golden Duckwin Game Bantam Hen—First, E. G. Roberts.
Silver Duckwing Game Bantam Cock—First, E. G. Roberts.
Birchen Game Bantam Cock—First, E. G. Roberts.
Birchen Game Bantam Cockerel—First, E. G. Roberts.
Birchen Game Bantam Hen—First, E. G. Roberts.
Birchen Game Bantam Pullet—First, E. G. Roberts.
Red Pyle Game Bantam Cock—First, E. G. Roberts.
Red Pyle Game Bantam Cockerel—First, E. G. Roberts.
Red Pyle Game Bantam Hen—First, E. G. Roberts.

Red Pyle Game Bantam Pullet—First, E. G. Roberts.

White Game Bantam Cock—First, E. G. Roberts.

White Game Bantam Cockerel—First, E. G. Roberts.

White Game Bantam Hen—First, E. G. Roberts.

White Game Bantam Pullet—First, E. G. Roberts.

Black Game Bantam Cockerel—First, E. G. Roberts.

Black Game Bantam Pullet—First, E. G. Roberts.

ORIENTAL GAMES AND BANTAMS.

EXHIBITORS.

Mrs. S. A. Hawk, Chariton, Iowa; Morgan Horse Farm, Plainfield, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

JUDGE..............FRED SHELLABARGER, West Liberty, Iowa.

Cornish Indian Cock—First, Mrs. S. A. Hawk; second, E. G. Roberts.

Cornish Indian Cockerel—First, Mrs. S. A. Hawk; second, Morgan Horse Farm; third, Mrs. S. A. Hawk.

Cornish Indian Hen—First and third Mrs. S. A. Hawk, second, E. G. Roberts.

Cornish Indian Pullet—First, Morgan Horse Farm; second, third and fourth, Mrs. S. A. Hawk.

White Indian Cock—First, E. G. Roberts.

White Indian Hen—First, E. G. Roberts.

Black Sumatras Cock—First, E. G. Roberts.

Black Sumatras Hen—First, E. G. Roberts.

ORNAMENTAL GAMES AND BANTAMS.

EXHIBITORS.

E. B. Cramblit, Ames, Iowa; L. & E. Hanson & Company, Dean, Iowa; Lester M. Collins, Des Moines, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; M. C. Miller, Des Moines, Iowa; T. H. West, Mitchellville, Iowa; R. E. West, Altoona, Iowa.

AWARDS.

JUDGE..............FRED SHELLABARGER, West Liberty, Iowa.

Golden Seabright Cock—First, E. G. Roberts.

Golden Seabright Cockerel—First, E. G. Roberts.

Golden Seabright Hen—First, E. G. Roberts.

Golden Seabright Pullet—First, E. G. Roberts.

Silver Seabright Cock—First, E. G. Roberts; second, L. & E. Hanson & Company.

Silver Seabright Cockerel—First, E. G. Roberts.

Silver Seabright Pullet—First, E. G. Roberts.

Silver Seabright Hen—First, E. G. Roberts; second, L. & E. Hanson & Company.

White Rose Comb Cock—First, E. G. Roberts.

White Rose Comb Cockerel—First, E. G. Roberts.

White Rose Comb Hen—First, E. G. Roberts.

White Rose Comb Pullet—First, E. G. Roberts.

Black Rose Comb Cock—First, E. G. Roberts.

Black Rose Comb Cockerel—First, E. G. Roberts.

Black Rose Comb Hen—First, E. G. Roberts.

Black Rose Comb Pullet—First, E. G. Roberts.

White Booted Cock—First, E. G. Roberts.

White Booted Cockerel—First, E. G. Roberts.

White Booted Hen—First, E. G. Roberts.

White Booted Pullet—First, E. G. Roberts.

Light Brahma Cock—First, E. G. Roberts.

Light Brahma Hen—First, E. G. Roberts.

Buff Cochin Cock—First, E. G. Roberts; second, Geo. S. Phillips; third, Lester M. Collins.

Buff Cochin Cockerel—First, T. H. West; second, E. B. Cramblit; third, M. C. Miller.

Buff Cochin Hen—First, E. G. Roberts; second, Weir Hart; third, Lester M. Collins; fourth, Geo. S. Phillips.

Buff Cochin Pullet—First, Geo. S. Phillips; second, M. C. Miller; third, Lester M. Collins; fourth, T. H. West.

Partridge Cochin Cock—First, E. G. Roberts.

Partridge Cochin Cockerel—

Partridge Cochin Hen—First, E. G. Roberts.

White Cochin Cock—First, R. E. West.

White Cochin Cockerel—First, E. G. Roberts; second, T. H. West.

White Cochin Hen—First, E. G. Roberts; second, R. E. West.

White Cochin Pullet—First, E. G. Roberts.

Black Cochin Cock—First, E. G. Roberts; second, Geo. S. Phillips.

Black Cochin Cockerel—First, E. G. Roberts; second, R. E. West.

Black Cochin Hen—First, E. G. Roberts; second, Geo. S. Phillips.

Black Cochin Pullet—First, E. G. Roberts; second, R. E. West.

Black Tailed Japanese Cock—First, E. G. Roberts.

Black Tailed Japanese Cockerel—First, E. G. Roberts.

Black Tailed Japanese Hen—First, E. G. Roberts.

Black Tailed Japanese Pullet—First, E. G. Roberts.

White Japanese Cock—First, E. G. Roberts.

White Japanese Cockerel—First, E. G. Roberts.

White Japanese Hen—First, E. G. Roberts.

White Japanese Pullet—First, E. G. Roberts.

Black Japanese Cock—First, E. G. Roberts.

Black Japanese Hen—First, E. G. Roberts.

Bearded White Polish Cock—First, E. G. Roberts.

Bearded White Polish Hen—First, E. G. Roberts.

Non-Bearded Polish Cock—First, E. G. Roberts.

Non-Bearded Polish Hen—First, E. G. Roberts.

MISCELLANEOUS.

EXHIBITORS.

E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

Judge..............................W. S. Russell, Ottumwa.

White Silkie Cock—First, E. G. Roberts.
White Silkie Hen—First, E. G. Roberts.
White Sultan Cock—First, E. G. Roberts.
White Sultan Hen—First, E. G. Roberts.
Any Color Frizzles Cockerel—First, E. G. Roberts.
Any Color Frizzles Hen—First, E. G. Roberts.
Any Color Frizzles Pullet—First, E. G. Roberts.

TURKEYS.

EXHIBITORS.

F. Gage Cutler, Carthage, Illinois; W. M. Shaw & Co.; Monroe, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; F. F. & V. G. Warner, Bloomfield, Iowa; J. C. Watts, Berwick, Iowa; Harry H. Wheeler, Elburn, Illinois.

AWARDS.

Judge..............................W. S. Russell, Ottumwa.

Bronze Turkey Cock—First, F. F. & V. G. Warner; second, J. C. Watts; third, F. Gage Cutler.

Bronze Turkey Cockerel—First, F. F. & V. G. Warner.

Bronze Turkey Hen—First, F. F. & V. G. Warner; second, J. C. Watts.

Bronze Turkey Pullet—First, F. F. & V. G. Warner.

Narragansett Turkey Hen—First, F. Gage Cutler; second, E. G. Roberts.

White Turkey Cock—First, W. M. Shaw & Co.; second, Harry H. Wheeler; third, E. G. Roberts.

White Turkey Cockerel—First, W. M. Shaw & Co.

White Tukey Hen—Fist, W. M. Shaw & Co.; second, E. G. Robets.

White Tukey Pullet—First, W. M. Shaw & Co.

Black Turkey Cock—First, E. G. Roberts.

Black Turkey Hen—First, E. G. Roberts.

DUCKS.

EXHIBITORS.

Buck Brothers, Prairie City, Iowa; Wib. Clements, Agency, Iowa; L. & E. Hanson & Company, Dean, Iowa; F. Gage Cutler, Carthage, Illinois; J. T. Perry, Selma, Iowa; Ed Messer, Cedar Rapids, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; F. F. & V. G. Warner, Bloomfield, Iowa; M. P. Warner, Des Moines, Iowa.

AWARDS.

Judge..............Fred Shellabarger, West Liberty, Iowa.

White Pekin Drake, Old—First, J. T. Perry; second, F. F. & V. G. Warner; third, F. Gage Cutler.

White Pekin Drake, Young—First, M. P. Warner; second, M. P. Warner; third, E. G. Roberts.

White Pekin Duck, Old—First, F. F. & V. G. Warner; second, E. G. Roberts; third, F. Gage Cutler.

White Pekin Duck, Young—First, E. G. Warner; second, M. P. Warner; third, F. F. & V. G. Warner.

White Aylesbury Drake, Old—First, E. G. Roberts.

White Ayesbury Drake, Young—First, E. G. Roberts.

White Aylesbury Duck, Old—First, E. G. Roberts.

White Aylesbury Duck, Young—First, E. G. Roberts.

Colored Rouen Drake, Old—First, E. G. Roberts; second, L. & E. Hanson & Company.

Colored Rouen Drake, Young—First, E. G. Roberts.

Colored Rouen Duck, Old—First, E. G. Roberts; second, L. & E. Hanson & Company.

Colored Rouen Duck, Young—First, E. G. Roberts; second, L. & E. Hanson & Company.

Black Cayuga Drake, Old—First, E. G. Roberts.

Black Cayuga Duck, Old—First, E. G. Roberts.

Gray Call Drake, Old——First, E. G. Roberts.

Gray Call Drake, Young—First, E. G. Roberts.

Gray Call Duck, Old—First, E. G. Roberts.

Gray Call Duck, Young—First, E. G. Roberts.

White Call Drake, Old—First, E. G. Roberts.

White Call Duck, Old—First, E. G. Roberts.

Black East India Drake, Old—First, E. G. Roberts.

Black East India Drake, Young—First, E. G. Roberts.

Black East India Duck, Old—First, E. G. Roberts.

Black East India Duck, Young—First, E. G. Roberts.

White Crested Drake, Old—First, E. G. Roberts.

White Crested Duck, Old—First, E. G. Roberts.

Colored Muscovy Drake, Old—First, E. G. Roberts; second, Buck Bros.

Colored Muscovy Drake, Young—First, E. G. Roberts; second and third, Buck Bros.

Colored Muscovy Duck, Old—First, E. G. Roberts; second and third, Buck Bros.

Colored Muscovy Duck, Young—First, E. G. Roberts; second and third, Buck Bros.

White Muscovy Drake, Old—First, E. G. Roberts.

White Muscovy Duck, Young—First, E. G. Roberts.

Indian Runner Drake, Old—First, Ed. Messer; second, E. G. Roberts; third, Wib Clements.

Indian Runner Drake, Young—First, Ed. Messer; second, E. G. Roberts; third, Wib. Clements.

Indian Runner Duck, Old—First, Ed. Messer; second, E. G. Roberts; third, Wib. Clements.

Indian Runner Duck, Young—First, Ed. Messer; second E. G. Roberts; third, Wib. Clements.

GEESE.

EXHIBITORS.

Carrie B. Farmer, Indianola, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; W. M. Shaw & Company, Monroe, Iowa; Harry H. Wheeler, Elburn, Ill.

AWARDS.

JUDGE.............................W. S. RUSSELL, Ottumwa.

Gray Toulouse Gander, Old—First, E. G. Roberts; second, W. M. Shaw & Company.

Gray Toulouse Gander, Young—First, E. G. Roberts, second, W. M. Shaw & Company.

Gray Toulouse Goose, Old—First, E. G. Roberts; second, W. M. Shaw & Company.

Gray Toulouse Goose, Young—First, E. G. Roberts; second, W. M. Shaw & Company.

White Embden Gander, Old—First, E. G. Roberts; second, W. M. Shaw & Company; third, Harry H. Wheeler.

White Embden Gander, Young—First, E. G. Roberts; second, Carrie B. Farmer.

White Embden Goose, Old—First, E. G. Roberts; second, W. M. Shaw & Company; third, Carrie B. Farmer.

White Embden Goose, Young—First, E. G. Roberts.

Gray African Gander, Old—First, E. G. Roberts.

Gray African Goose, Old—First, E. G. Roberts.

Brown Chinese Gander, Old—First, E. G. Roberts.

Brown Chinese Gander, Young—First, E. G. Roberts.

Brown Chinese Goose, Old—First, Ed G. Roberts.

Brown Chinese Goose, Young—First, E. G. Roberts.

BREEDING PENS.

AWARDS.

Barred Plymouth Rock Fowls—First, Buck Bros.; second, J. S. Shannon; third, J. H. Chandler.

Barred Plymouth Rock Chicks—First, J. S. Shannon; second, W. A. Hartman; third, G. W. Stout.

White Plymouth Rock Fowls—First, F. H. Hollway; second, Hunkydory Farm; third, J. T. Perry.

White Plymouth Rock Chicks—First, F. H. Hollway; second, Hunkydory Farm; third, Walter Perkins.

Silver Wyandotte Fowls—First, Walter Perkins; second, F. F. & V. G. Warner; third, A. L. Anderson.

Silver Wyandotte Chicks—First, F. F. & V. G. Warner; second, Walter F. Reppert; third, Walter Perkins.

Golden Wyandotte Fowls—First, A. L. Anderson.

White Wyandotte Fowls—First and second, Dr. Thomas P. Bond; third, Mrs. N. B. Ashby.

White Wyandotte Chicks—First and second, Dr. Thomas P. Bond; third, Mrs. N. B. Ashby.

Buff Wyandotte Fowls—First, A. L. Anderson; second, F. F. & V. G. Warner.

Buff Wyandotte Chicks—First, A. L. Anderson; second, F. F. & V. G. Warner.

Columbia Wyandotte Chicks—First, M. C. Miller.

Partridge Wyandotte Fowls—First, Don G. Berry.

Partridge Wyandotte Chicks—First, Don G. Berry.

R. C. Rhode Island Red Fowls—First, E. B. Cramblit; second, D. W. Rich; third, N. A. Ranck.

R. C. Rhode Island Red Chicks—First, D. W. Rich.

S. C. Rhode Island Red Fowls—First, E. B. Cramblit; second, Elliott Purmort; third, Wib Clements.

S. C. Rhode Island Red Chicks—Elliott Purmort; second, C. A. Kenworthy; third, Elliott Purmort.

Light Brahma Fowls—First, L. & E. Hanson & Co.

Light Brahma Chicks—First, F. W. Johnson; second, Weir Hart.

Buff Cochin Fowls—First, F. W. Johnson.

Partridge Cochin Chicks—First, Mrs. E. M. Brinckler.

Buff Orpington Fowls—First, second and third, Sun Light Poultry Yards.

Buff Orpington Chicks—First and second, Sun Light Poultry Yards.

Black Langshan Fowls—First, R. G. McDuff; second, R. E. West; third, Walter Perkins.

Black Langshan Chicks—First, Margaret E. Daly; second, R. E. West; third, Wib Clements.

S. C. White Leghorn Chicks—First, A. Stocker; second, Barker Bros.; third, F. W. Johnson.

R. C. White Leghorn Fowls—First, John D. Reeler.

R. C. White Leghorn Chicks—First, John D. Reeler.

S. C. Brown Leghorn Fowls—First and second, W. Patterson; third, W. O. Coon.

S. C. Brown Leghorn Chicks—First, W. Patterson; second, Will Michael; third, W. O. Coon.

PIGEONS.

EXHIBITORS.

Walter F. Reppert, Burlington, Iowa; Wib F. Clements, Agency, Iowa.

AWARDS.

JUDGE ....W. S. RUSSELL, Ottumwa, Iowa.

Pair Homing Pigeons—First, Wib F. Clements.

Pair Tumbler Pigeons—First, W. F. Reppert.

SCORING IN BOY'S LIVE STOCK AND CORN JUDGING CONTEST, IOWA STATE FAIR, 1909, FOR IOWA STATE COLLEGE SCHOLARSHIPS.

Rank	Name	Address	Poland China Swine		Duroc Jersey Swine		Draft Horses		Shire Horses		Shorthorn Cattle		Angus Cattle				
			Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Corn 200	Total	Standing percentage
1	Edward Vaughn	Marion, Iowa					60	36	40	35	46	36	60	36	175	524	87⅓
2	Earl C. Girton	State Center	60	29	52	32	58	36	48	34	60	34	55	38	150	686	85¾
3	Bruce Purvis	West Liberty					60	30	50	30	54	34	47	20	190	505	84⅙
4	Ray Keables	Gilman	55	26	60	36	50	30	50	35	60	34	30	31	170	667	83⅜
5	Ryle S. McKee	Indianola	50	30	60	38	60	32	35	25	46	32	30	34	187	659	82⅜
6	Jesse M. Dowell	Bedford	15	20	50	29	60	36	50	32	60	36	45	27	180	640	80
7	Wm. S. Lynes	Plainfield					52	34	34	28	60	34	45	32	160	479	79⅚
8	Albert Ruess	West Liberty	45	26	60	32	58	36	30	32	54	30	45	32	150	630	78½
9	Bernard Myers	Des Moines	30	22	60	34	62	32	30	30	60	36	45	25	172	628	78½
10	Andrew Rector	Greeley	10	12	60	31	58	20	56	34	54	35	52	31	172	625	78⅛
11	Claud Mason	Iowa Falls	20	20	60	32	40	25	46	31	54	32	45	31	193	619	77⅜
12	Geo. W. Boyack	Grinnell	55	22	55	24	54	15	46	34	46	24	52	27	165	619	77⅜
13	Earl P. Waltz	Spaulding	15	20	60	38	62	26	41	30	60	36	45	30	165	618	77¼
14	Lloyd Wellendorf	Algona	15	18	52	25	52	34	54	36	40	30	60	30	162	616	77
15	Harley Walker	Ames					52	28	34	26	30	20	60	37	170	457	76⅙
16	Andrew Patience	Imogene	60	20	60	31	54	30	30	26	46	30	30	25	171	608	76
17	David Wilson	West Liberty	15	28	55	39	60	36	50	34	46	28	32	30	150	603	75⅜
18	H. Longworth	Polk City	45	28	55	32	60	36	56	34	35	28	52	29	175	665	74⅜
19	C. V. Hill	New Sharon	16	20	50	30	60	38	55	35	60	30	25	20	168	607	75⅛
20	Albert Leech	West Liberty	45	28	60	33	25	28	46	32	60	34	30	28	150	599	74⅞
21	Bennie Hifman	West Liberty	20	28	30	30	50	32	35	32	54	38	48	30	165	592	74
22	Edmund P. Hanson	Dean	50	25	52	30	15	25	40	30	54	31	32	30	175	589	73⅝
23	Wallace Ashby	Des Moines	20	21	52	29	30	30	48	32	52	36	45	26	148	569	71⅛
24	Lonnie Freeman	Norwalk	15	20	60	30	28	22	35	25	52	37	30	30	180	564	70½
25	D. B. Hill	New Sharon	30	26	52	30	50	28	42	31	25	32	25	30	160	561	70⅛
26	Paul V. Oxley	Atalissa	18	15	60	20	58	20	48	25	20	20	45	27	170	546	68¼
27	Charles Leavens	Shell Rock	30	20	52	28	58	30	34	26	35	25	30	23	150	541	67⅝
28	Herman Steen	West Liberty	22	18	40	34	25	25	30	29	54	30	30	30	170	537	67⅛
29	Harry Nauman	West Liberty	45	19	50	27	25	20	35	24	54	32	32	25	140	528	66
30	Floyd S. Barnes	West Liberty	45	10	60	10	30	10	40	30	20	15	60	25	150	505	63⅛
31	R. O. Westley	Panora	22	20	44	26	30	25	56	35	20	24	20	20	175	502	62¾

EDW. N. WENTWORTH,
Superintendent of Contest.

SCORING IN GIRLS' COOKING CONTEST, IOWA STATE FAIR, 1909, FOR IOWA STATE COLLEGE SCHOLARSHIPS.

			STEAK			BISCUIT			
Rank	Name	Address	Finished product 40	Method 20	Reasons 40	Finished product 40	Method 20	Reasons 40	Total
1	Maude Campbell	Ames	35	18	37	30	18	40	178
2	Olive Snook	Des Moines	38	19	39	30	17	30	173
3	Lena F. Thompson	Jamaica	35	14	37	30	16	35	167
4	Marion Wentworth	State Center	30	15	30	30	15	30	150

MISS EDITH G. CHARLTON,
Superintendent of Contest.

PART XII.

REPORT OF AGRICULTURAL CONDITIONS

BY

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES IN IOWA

1909

ADAIR.

FRED D. MARTIN, GREENFIELD, OCTOBER 27, 1909.

General Condition of Crops and Season—Crops not up to average on account of late and wet spring; corn badly blown down.

Corn—Generally a good quality; will yield twenty to seventy bushels per acre.

Oats—Light; will run from fifteen to thirty bushels per acre and of fair quality.

Wheat—Practically none in the county.

Rye—None.

Barley—Very light this year; from ten to thirty bushels per acre.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—Good crop; average about four bushels for seed.

Clover—Poor.

Prairie Hay—Very little, if any.

Other Grains and Grasses—Tame hay of all kinds extra good; average about two tons per acre.

Potatoes—Fair Crop and good quality.

Vegetables—Good.

Apples—Fair crop but mostly frozen.

Other Fruits—Practically none.

Cattle—Have done well this season; generally a little short of stockers.

Horses—Have done well; good heavy shipments and extra good prices.

Swine—Crop of spring pigs lighter than usual; generally healthy and prices high.

Sheep—Less sheep business than usual and poor crop of lambs.

Poultry—Business has been good.

Bees—Lighter than usual.

Drainage—A great amount of tiling being done this fall.

Other Industries—Lands are rapidly increasing in value; loans steady; general condition good.

Report of Fair—Held September 14, 15 and 16, 1909. Exhibits were light, owing to bad weather on entrance day; paid out.

ADAMS.

GEO. F. BLISS, CORNING, SEPTEMBER 19, 1909.

General Condition of Crops and Season—Season very wet but crops grew well where land was high and rolling.

Corn—About seventy-five per cent. Nearly one-fourth of crop drowned out. Bids fair to be splendid quality.

Oats—Averaged about thirty-one bushels per acre; excellent quality.

Wheat—Winter wheat fine; yield about twenty-one bushels; spring wheat yield twelve bushels; good quality.

Rye—Very little raised; some sowed but nearly all pastured early and land plowed and planted to corn.

Barley—Good crop; yield close to thirty-eight bushels per acre.

Buckwheat—None raised.

Millet—Excellent and saved for hay in fine condition; very little threshed.

Sorghum—Good crop; considerable put in for molasses.

Timothy—Heavy on low lands but averaging all over probably one ton per acre.

Clover—First cutting very good, but no second cutting.

Prairie Hay—Extra good crop but small acreage in this county.

Other Grains and Grasses—Speltz a fair crop but not considered very valuable.

Potatoes—Early varieties probably three-fourths of average crop; late varieties about sixty per cent of crop.

Vegetables—Fair crop of most all kinds.

Apples—Largest crop in five years and of fine quality.

Other Fruits—Strawberries half a crop; raspberries sixty per cent; blackberries one hundred per cent.

Cattle—Have done well owing to timely rains; seems to be lots of them.

Horses—Plenty of horses and prices high; an unusual crop of colts this year.

Swine—Pig crop came too early and not as many saved as usual. Fat hogs are scarce.

Sheep—About the usual lamb crop last spring; are in good condition and selling well.

Poultry—About ninety per cent of crop this year but quality is excellent.

Bees—Good crop of honey owing to great amount of white clover.

Drainage—Great amount of tile put in this year but mostly three-inch, which is too small.

Other Industries—Mines furnished coal for practically the whole county; ten cents per bushel is asked at banks.

Lands—Prices advancing rapidly, probably twenty per cent raise this year; a number of farms sold for $125 per acre.

Report of Fair—Held at Corning Aug. 16, 17, 18 and 19, 1909.

ALLAMAKEE.

A. C. LARSON, WAUKON, OCTOBER 23, 1909.

General Condition of Crops and Season—Generally good.

Corn—A good average but not a bumper crop.

Oats—Extra good quality; yield per acre fair.

Wheat—Little raised.

Rye—Fair.

Barley—Good.

Flax—Very little grown.

Buckwheat—Only fair.

Millet—Good.

Sorghum—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—None.

Potatoes—Good.

Vegetables—Good.

Apples—Good in some parts of the county.

Other Fruits—Good.

Cattle—Very good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Nothing extra.

Drainage—Good in this county.

Other Industries—Farmers are prosperous.

Lands—Values increasing.

Report of Fair—Held at Waukon, September 21, 22, 23 and 24. Weather was fine, attendance good and the fair a success.

AUDUBON.

S. C. CURTIS, AUDUBON, OCTOBER 5, 1909.

General Condition of Crops and Season—Fair. Crops cut short on account of heavy rains early in the season followed by continued hot and dry weather.

Corn—Quality good but yield short on account of dry weather.

Oats—Not an average crop, yielding from twenty to thirty-five bushels per acre; quality good.

Wheat—Not much grown and quality not the best grade.

Barley—Crop and quality poor.

Buckwheat—Little grown.

Millet—Very little grown but yield good.

Sorghum—Grown in some parts of the county and the crop is fair.

Timothy—Good hay crop this year.

Clover—Made a great growth this year on account of spring rains; the yield is good.

Potatoes—Good yield of early potatoes; late potatoes not as good as usual.

Apples—Very short crop.

Other Fruits—Crop short on account of late freezes in spring.

Cattle—A large number are raised and fattened, taking a large part of the corn crop.

Horses—The grade is improving every year; large numbers shipped.

Swine—One of the principal industries. Many prominent breeders reside in the county.

Sheep—More raised each year; several thousand pounds of wool shipped annually.

Poultry—A great industry; carloads of eggs shipped east by poultry buyers.

Bees—Not enough kept to supply the local demand.

Drainage—Good natural drainage.

Lands—Have been changing hands rapidly the past summer, prices ranging from $90 to $160 per acre.

Report of Fair—Held at Audubon, September 21, 22, 23, 24, 25, 1909. One of the most successful fairs ever held in the county. The corn exhibit was excellent, nearly every township having an exhibit; premiums paid on corn amounted to $455.

BENTON.

ARAD THOMPSON, VINTON, SEPTEMBER 19, 1909.

General Condition of Crops and Season—General condition of crops more than an average. Had it not been for the dry weather while corn and grain were maturing this would have been a bumper crop.

Corn—Corn crop affected by the drouth but will be an average crop.

Oats—Better than anticipated.

Wheat—Very little raised.

Rye—None raised.

Barley—Rather an inferior crop.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—Not enough to report.

Timothy—Good crop.

Clover—Good crop.

Prairie Hay—Very little left.

Potatoes—A big crop and of good quality.

Vegetables—Average crop.

Apples—Very small crop.

Other Fruits—Poor.

Cattle—A large number and of very fine quality.

Horses—The best year for horses ever known in this county.

Swine—No disease and a successful year.

Sheep—More sheep than usual; this industry is growing in this county.

Poultry—The poultry business is becoming a source of great profit.

Bees—Not many kept.

Drainage—No public drainage but individual farmers have done much in this line.

Lands—The price of lands is soaring.

Report of Fair—Held at Vinton September 8, 9, and 10, 1909. Farmers have taken an interest in the fair and freely bring their products and stock. The weather was fine, attendance good, entertainment pleasing, and the order was all that could be asked for. Patrons were well pleased.

BLACK HAWK.

F. E. HOYT, LA PORTE CITY, OCTOBER 18, 1909.

General Condition of Crops and Season—Good.

Corn—Good average crop; fifty bushels per acre.

Oats—Good quality; average yield thirty-five to forty bushels per acre.

Wheat—None raised.

Rye—Good, but not much raised.

Barley—Poor; yield thirty to forty bushels per acre.

Flax—None raised.

Buckwheat—Poor; very little raised.

Millet—Very little raised.

Sorghum—Very little raised.

Timothy—Good.

Clover—Hay good, but very little seed saved.

Prairie Hay—None grown.

Potatoes—Fair yield; quality good.

Vegetables—Good.

Apples—Crop destroyed by early hail.

Other Fruits—Fair crop.

Cattle—Good and in good condition; prices higher than last year.

Horses—Scarce; prices very high.

Swine—Scarce and high in price.

Sheep—Very few in county.

Poultry—Plenty and good price.

Bees—Not a good season for bees, forage scarce.

Drainage—Many car loads of tile put in.

Other Industries—One and one-half million cans of corn put up at LaPorte City this year. Sugar beet industry just introduced here this year; quality good.

Lands—Price from $100 to $150 per acre.

Report of Fair—Held at LaPorte City, September 14, 15, 16, 17, 1909. Attendance light the first day but very good the balance of days.

BREMER.

D. A. LONG, WAVERLY, OCTOBER 28, 1909.

General Condition of Crops and Season—Slightly above the average.

Corn—Fifteen per cent above normal.

Oats—Five per cent below normal.

Wheat—Fifteeen per cent above normal.

Rye—Normal.

Barley—Fifteen per cent below normal.

Flax—None grown.

Buckwheat—Not grown.

Millet—Not grown.

Sorghum—Normal.

Timothy—Ten per cent above normal.

Clover—Ten per cent above normal.

Prairie Hay—Normal.

Other Grains and Grasses—Normal.

Potatoes—Fifteeen per cent below normal.

Vegetables—Twenty-five per cent above normal.

Apples—Half a crop.

Other Fruits—Twenty per cent below normal.

Cattle—Normal.

Horses—Normal.

Swine—Normal in condition, twenty per cent below in numbers.

Sheep—Normal.

Poultry—Fifteen per cent above normal.

Bees—Normal.

Drainage—In good working order.

Other Industries—Generally prosperous.

Lands—In active demand.

Report of Fair—Held at Waverly, September 21, 22, 23, 24, 1909, being the first annual exhibition. All departments were well filled, new and additional barns and pens for all kinds of stock being required after the beginning of the fair. Quality of exhibits was good. Exhibits in grain, vegetable and fruit departments and in the ladies' department overrun the 5,600 square feet of space in Exposition Hall. Both day and evening programs were put on. Attendance was good and the fair financially and educationally a marked success. Not the least noticeable feature was the unanimous satisfaction expressed on the part of both exhibitors and patrons.

BOONE.

W. C. TRELOAR, OGDEN, OCTOBER 28, 1909.

General Condition of Crops and Season—Not very good.

Corn—About one-half of crop.

Oats—About two-thirds of a crop.

Wheat—None raised.

Rye—None raised.

Barley—None raised.

Flax—None raised.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—Good.

Clover—Good.

Prairie Hay—None.

Other Grains and Grasses—Grasses good.

Potatoes—Fair.

Vegetables—Good.

Apples—Fair.

Other Fruits—Fair.

Cattle—Good.

Horses—Good.

Swine—About two-thirds of a crop.

Sheep—None.

Poultry—Good.

Bees—Fair.

Drainage—A great deal of drainage has been done in the county.

Other Industries—Good.

Lands—High.

Report of Fair—Held at Ogden, September 14, 15, 16, 17, 1909.

BOONE.

A. M. BURNSIDE, BOONE, OCTOBER 6, 1909.

General Condition of Crops and Season—The soil was in good condition for putting in early crops; late planting was retarded by excessive rains. All crops made good growth until affected by dry weather later in the season.

Corn—Usual acreage planted and of good yield and quality on high ground; a failure on low, untiled ground.

Oats—Average yield and good quality.

Wheat—Very little sown and average yield.

Rye—None raised.

Barley—Very little sown; good yield.

Flax—None raised.

Buckwheat—Very little sown.

Millet—Good crop.

Sorghum—Poor.

Timothy—Good.

Clover—Good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Poor crop; being shipped in for home consumption.

Vegetables—Good.

Apples—Light crop but good quality.

Other Fruits—Light crop.

Cattle—Condition good; a strong demand for feeders.

Horses—Good demand for horses; more being raised than in former years.

Swine—No disease reported and in good condition; not as many raised as in previous years.

Sheep—Few raised but pure bred.

Poultry—Poor year for poultry but demand good prices.

Bees—Average.

Drainage—More county drains being established each year.

Other Industries—New coal fields being developed, with a strong demand for fuel. Brick and tile plants are working full time to fill orders.

Lands—Selling at from $90 to $130 per acre, according to location.

Report of Fair—Held at Boone, September 21, 22, 23, 24, 1909. Weather and attendance good the last two days. Increased exhibits over last year in all departments.

BUCHANAN.

P. G. FREEMAN, INDEPENDENCE, SEPTEMBER 18, 1909.

General Condition of Crops and Season—Crops are considered very good in this county. Early part of the season was favorable but the dry weather in August did some damage to the corn and a good deal of damage to the potatoes.

Corn—Larger acreage than usual and crop is good; the stand was never better.

Oats—Good quality; yield from thirty to fifty bushels per acre.

Wheat—The interest in wheat is growing; mostly winter wheat in this section; the exhibits at the county fair were fine.

Rye—Not much raised.

Barley—Most of the farmers raise some barley, using it for early feed for hogs; seldom any for sale.

Flax—None raised.

Buckwheat—A light crop in this section.

Millet—Not enough raised to report on.

Sorghum—Very small acreage.

Timothy—While not so great acreage as the last two years, the quantity and quality are good.

Clover—A good crop, fully up to the best seasons.

Prairie Hay—Very little in this locality; quality good as far as it goes.

Other Grains and Grasses—As timothy and clover are the main hay crop, other grasses are not in evidence.

Potatoes—Early potatoes did nicely, late ones nearly ruined by dry weather in August; on the whole the crop is short.

Vegetables—Late rains are making the turnips and beets. There are several hundred acres of sugar beets; crop looks well and promises a good yield per acre.

Apples—Crop is light this year.

Other Fruits—Berries of all kinds were good yield, fully up to the average, especially strawberries.

Cattle—An increase in quality, but not in quantity.

Horses—More attention is given to the raising of horses and the quality is being matrially improved. Prices range very high, which has much to do with the interest taken in the raising of horses.

Swine—The crop of hogs is not up to a normal scale. While every farmer keeps a few, not many of them are trying to increase their stock.

Sheep—Increasing interest manifested in the raising of sheep, and many of the farmers are in the business on a small scale.

Poultry—A very important item with the farmer, prevailing prices making it profitable. A good crop of chickens and ducks, but a small crop of turkeys and geese.

Bees—Are kept only in a small way.

Drainage—Is a live subject in this county. Much tiling was done last year and is giving good satisfaction; more is being laid this year. Our cement tile works are rushed with business.

Other Industries—A gasoline engine works is just ready to open their new plant here; the spring bed factory is erecting new buildings, and the corn crusher plant is flourishing. The canning factory is rushed with business and will probably increase their output one-half.

Lands—There seems to be no shrinkage in the price of farm lands or the demand for them; prices range from $60 to $130.

Report of Fair—Held at Independence September 7, 8, 9 and 10, 1909. Only fairly good on account of bad weather. Exhibits were good; horses, mules, cattle, sheep, hogs and poultry made a good showing.

BUENA VISTA.

C. H. WEGERSLEV, ALTA, OCTOBER 10, 1909.

General Condition of Crops and Season—The year 1909 will be remembered as one of the most unfavorable for farming operations for a decade. In the spring and early summer almost incessant rains prevented the proper cultivation of fields, and from the fore part of May until the middle of July farmers were unable to till their fields for more than one or two days a week. The latter part of the season was dry, being what was needed to mature all crops.

Corn—Corn was late in being planted, rain prevented proper cultivation, and all through the season the crop was from two to three weeks late. A fair crop.

Oats—About two-thirds of a crop; yield was light but quality was good, the kernels being plump and full.

Wheat—Little raised in the county, but of good yield.

Rye—Little raised but of fair quality.

Barley—An average crop.

Flax—None raised.

Buckwheat—Little planted.

Millet—Little raised.

Sorghum—Little raised.

Timothy—Good crop and large acreage.

Clover—Good crop and yield. Much clover hay was put up for feed.

Prairie Hay—None raised.

Potatoes—A large acreage and fair yield.

Vegetables—Late in season but a good yield.

Apples—Abundant crop and more than demand; hundreds of bushels rotted on the ground. No winter apples raised.

Other Fruits—Plums and cherries, small yield. This was true of the berry crop as well.

Cattle—Good demand and prices high. Pasturage was exceptionally fine all season and cattle are in fine condition.

Horses—Demand brisk and prices high.

Swine—An average crop of pigs. Little disease has been reported.

Sheep—Few raised in county.

Poultry—An average number raised. Eggs were high all during the year.

Drainage—All low lands in the county are being drained by both private and county work. Many drainage districts are being established. A great deal of tiling is being done.

Lands—Few farms are offered for sale. Prices reported range from $75 to $150 per acre. A few farms are offered for from $135 to $150 per acre.

Report of Fair—Held at Alta August 18, 19 and 20, 1909. The weather was ideal and attendance good. Exhibits in every department were heavy, especially in the horse, cattle and swine departments. The dairy test, instituted jointly by the fair association and dairy interests, brought out ten contestants. The interest was encouraging for future exhibitions.

BUTLER.

W. C. SHEPARD, ALLISON, OCTOBER 21, 1909.

General Condition of Crops and Season—The season was somewhat wet in the spring, but very fair on the whole; there was no killing frost until the 10th of October. The corn is an average stand.

Corn—Average yield; practically all matured.

Oats—Small yield but good quality.

Wheat—But very little raised; quality good.

Rye—Good yield; above the average.

Barley—Good yield.

Flax—None raised.

Buckwheat—Small acreage; average yield.

Millet—Light because of dry weather in the fall.

Sorghum—Very little raised; quality good.

Timothy—Heavy yield generally; put up in good condition.

Clover—Good crop; considerable threshed for seed.

Prairie Hay—But very little raised; average yield.

Other Grains and Grasses—Average yield.

Potatoes—An average yield, but the early potatoes were affected by the wet weather in the spring, except on sandy soil. Late potatoes are good generally.

Vegetables—A very good yield.

Apples—A very poor crop, affected by worms. Where the trees were sprayed the crop is good.

Other Fruits Small fruits were injured by the dry weather in July.

Cattle—The average number and in very good condition.

Horses—A tendency for a better class and selling high.

Swine—The average number, generally in good condition. A little cholera in the county.

Sheep—Few sheep but of a very good class.

Poultry—Poultry raising increasing, and of the better kinds.

Bees—Bees are scarce, but there was a large yield of good honey this year.

Drainage—Farmers in the western part of the county are taking the benefit of the drainage laws and are forming drainage ditches. Tile drainage is increasing all over the county.

Other Industries—Brick and tile.

Lands—Increasing in value and now ranging from $50 from to $150 per acre.

Report of Fair—Held at Allison September 7, 8 and 9, 1909. There was the largest number of exhibits for several years, but bad weather on the second and third days prevented a large attendance. The society is in a very good condition financially.

CALHOUN.

J. C. HOAG, MANSON.

General Condition of Crops and Season—Crops in general are of excellent quality, but in quantity not over abundant. The season was extremely wet until the latter part of July; it was almost impossible to put in the crops, yet the quality was never better.

Corn—About 80 per cent of the regular yearly crop.

Oats—Yielded from 20 to 45 bushels per acre and of excellent quality.

Wheat—None.

Rye—None.

Barley—None.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—An excellent crop.

Clover—An abundant crop.

Prairie Hay—The prairie hay is of fine quality and we have it in abundance for this locality.

Other Grains and Grasses—None.

Potatoes—Average about 60 per cent of the usual crop; quality fair.

Vegetables—Vegetables were fine; as good as any other year until the dry weather in August.

Apples—An abundant supply throughout the county, and of good quality.

Other Fruits—Small fruits, such as trawberries and currants, were equal to preceding years, but no cherries or plums.

Cattle—Are in good condition.

Horses—Are of the finest quality and are reaching a higher standard every year; a marked improvement in every class of horses.

Swine—The swine rank A-1 in every respect; good quantity and fine quality in every breed.

Sheep—But few sheep raised, but they are of the very best.

Poultry—All kinds of poultry raised, and the blue ribbon kind in all breeds.

Drainage—The entire county is thrown into drainage districts and drained by county dredges. Every man whose land is drained either directly or indirectly is taxed to help pay for the ditches.

Other Industries—Few factories, mills, etc.

Lands—Land has recently advanced in price on account of taxes, etc. Land sells for about $125 per acre.

Report of Fair—Held at Manson September 7, 8, 9, 10, 1909. The fair was a decided success; the best ever held in Manson. The attendance was good and the exhibits equal, if not superior, to previous years; every class was well filled. The free attractions were of the best class, and altogether it was a successful fair.

CALHOUN.

W. Q. STEWART, ROCKWELL CITY, OCTOBER 20, 1909.

Corn—About 60 per cent of a crop; quality a little above the average.

Oats—About 75 per cent of a crop; quality good.

Wheat—None raised.

Rye—None raised.

Barley—None.

Flax—None raised.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—Good average crop.

Clover—Good average crop.

Prairie Hay—None.

Other Grains and Grasses—None.

Potatoes—Average crop.

Vegetables—Good crop.

Apples—Poor.

Other Fruits—Medium.

Cattle—Usual amount and condition good.

Horses—Usual amount and condition good.

Swine—Seventy-five per cent of usual number; condition good.

Sheep—A little on the increase.

Poultry—About the usual amount and condition good.

Bees—Good.

Drainage—On the increase, nearly double the amount being done this year over the preceding year.

Other Industries—About the same as last year.

Lands—Values about $10 per acre higher.

CASS.

W. [illegible], ATLANTIC, OCTOBER 26, 1909.

General Condition of Crops and Season—Crops and season rather backward.

Corn—Fair.

Oats—Good.

Wheat—Nothing extra this year, although some pieces were good.

Rye—Fine.

Barley—Poor.

Flax—None raised.

Buckwheat—Not much raised.

Millet—Not much raised.

Sorghum—Not much raised.

Timothy—Heavy crop.

Clover—Heavy crop.

Prairie Hay—None left here.

Other Grains and Grasses—Fair.

Potatoes—Good.

Vegetables—Good.

Apples—Large crop this year.

Other Fruits—Fair.

Cattle—One of the principal products of this community.

Horses—Many good horses raised here.

Swine—The pig crop was short this year.

Sheep—Good this year.

Lands—Lands have increased 10 per cent in value the last year.

Report of Fair—Held at Atlantic September 13, 14, 15, 16, 17, 1909. Was one of the best fairs we ever had.

CASS.

D. P. HOGAN, MASSENA, OCTOBER 23, 1909.

Corn—Corn crop started out in good shape with large acreage, but continued rains in June and July, with dry weather in August cut down the crop to not over 60 per cent.

Oats—Fair crop, good quality; probably 85 per cent.

Wheat—Fair crop, good quality; probably 85 per cent.

Rye—None grown.

Barley—Very little grown and poor crop.

Flax—None.

Buckwheat—None.

Millet—Very little grown.

Sorghum—Very little grown.

Timothy—Good crop; generally well saved.

Clover—Good crop of hay; seed light.

Prairie Hay—Very little.

Potatoes—Early crop fair; late crop very poor.

Vegetables—Generally good.

Apples—Good crop but badly injured by a freeze on October 10th.

Cattle—Average number.

Horses—About the same as usual.

Swine—Not quite so many as usual.

Sheep—About the same as usual.

Poultry—Fair crop.

Bees—Fair.

Drainage—More tile put in than ever before.

Lands—Increasing in value ten per cent.

Report of Fair—Held at Massena, September 6, 7, 8, 9, 1909. Attendance cut down on account of bad weather the first days. Exhibits in most departments were good and the fair was a success financially.

CEDAR.

[illegible] SIMMERMAKER, TIPTON, SEPTEMBER 22, 1909.

General Condition of Crops and Season—The general condition of crops is good; however, the season is latter than usual.

Corn—Not as good as expected. The early dry weather fired the corn and it is not filling as well as it would had there been rain at the proper time.

Oats—Above an average crop.

Wheat—Very little raised, but quality and yield good.

Rye—Fair.

Barley—Good crop, quality fine.

Flax—None raised.

Buckwheat—None raised to my knowledge.

Millet—Very little raised.

Sorghum—None raised to my knowledge.

Timothy—Yield good, quality good.

Clover—Yield and quality good.

Prarie Hay—None.

Other Grains and Grasses—None to speak of.

Potatoes—Average crop.

Vegetables—Good.

Apples—Poor crop.

Other Fruits—Not as good as other years.

Cattle—Good number in the county, and large number being fed.

Horses—More horses raised than in former years; quality good and prices high.

Swine—Plentiful; no cholera.

Sheep—Not a sheep country, although some farmers have fine flocks.

Poultry—Plentiful.

Bees—Not a good year for bees.

Drainage—Most of our land is drained.

Other Industries—Brick and tile plant, a canning factory employing about one hundred people during the canning season, and three produce concerns.

Lands—Prices high, from $75 to $200 per acre, depending upon quality, location and improvements.

Report of Fair—Held at Tipton, September 7, 8, 9, 1909, being the first annual meeting. Although rain the first days interfered with the attendance, the fair was a great success, being the best stock show ever held in the county and one of the best held in eastern Iowa this year; we had a number of herds of cattle from the state fair.

CERRO GORDO.

C. H. BARBER, MASON CITY, OCTOBER 27, 1909.

General Condition of Crops and Season—Excessive rains in the early part of the season, and drouth the latter part, followed by nice rains before corn had been much damaged.

Corn—The best crop we have had for several years; matured before killing frosts.

Oats—Rather light yield, but heavy and of good quality.

Wheat—Very little raised but well filled.

Rye—But little raised here; quality good.

Barley—But little raised here; quality fair.

Flax—But little raised; quality good, yield light.

Buckwheat—Yield very light.

Millet—Heavy yield; quality good.

Sorghum—Very little raised; quality good.

Timothy—Good stand, heavy crop of hay, excellent quality.

Clover—Good average crop; quality excellent.

Prairie Hay—Good crop; very little here.

Potatoes—Uneven; average yield about seventy-five bushels; quality good.

Vegetables—Good yield and quality good.

Apples—About an average yield; fair quality; undersized and dropped badly on account of drouth.

Other Fruits—Light yield and high in price.

Cattle—Pasturage has been excellent and cattle have done well; quantity below the average.

Horses—Quality improving but less in number.

Swine—Not over fifty per cent of a year ago; quality not up to normal on account of high priced feed.

Sheep—Increasing in quantity; quality improving.

Poultry—About an average quantity.

Bees—Not many here; honey high and scarce.

Drainage—Improving rapidly, considerable tile being laid.

Other Industries—A number of tile factories running full capacity and behind on orders. Conditions are the same with the large cement plant located here. Lime and other plants in a flourshing condition.

Lands—Increasing in value, and a large amount changing hands.

Report of Fair—Held at Mason City, September 21, 22, 23, 24, 1909. Weather was cold and windy, with slight rain one day. Attendance was very good. Live stock show was double that of one year ago; entries in floral hall were more than twice as many as last year, and the butter exhibit was the largest in the state this year. A test of milk cows, a butter makers' educational scoring contest, and a dairy day program with prominent speakers were interesting features. Free attractions were fine and the races good. The crowds were orderly and good natured.

CHEROKEE.

H. L. HEER, WASHTA, 1909.

General Condition of Crops and Season—The crops of Cherokee County were fairly good; rather better than could have been expected considering the climatic conditions.

Corn—Yield good in some localities while in others only fair. Corn ripened well but wet weather prevented its drying out and delayed husking.

Oats—Fair yield and of very fine quality; best for years; market price good.

Wheat—Not much wheat grown here of late years. This seems to be just out of the winter wheat district but we believe it is worthy of a fair trial.

Barley—Good crop and low quality.

Flax—None grown.

Buckwheat—None grown.

Timothy—A good fair crop and sells readily with good demand at $7.00 to $10.00 per ton.

Clover—Same as timothy.

Potatoes—Below average both in yield and quality.

Apples—The greatest apple year ever known in Cherokee County. Summer and fall varieties went to waste in every neighborhood but we need more winter varieties.

Other Fruits—The lands along the Little Sioux river are well adapted to fruit growing, especially in the southern part of the county.

Cattle—Dairying is receiving more attention; considerable interest is given to breeding pure bred and high grades are very common.

Horses—Horses are being quite well bred up as to grades and the Percherons are the most common breed. Little attention given to the trotting stock.

Swine—Has been very scarce on the average farm all through the year.

Sheep—*Sheep* growing has increased very largely the past few years.

Bees—The keeping of bees does not pay with honey selling below the value of other products and the demand is light even at a low price.

Report of Fair—No fair held in this county.

CHICKASAW.

P. H. BRANNON, NEW HAMPTON, OCTOBER 30, 1909.

General Condition of Crops and Season—Fair.

Corn—Good.

Oats—Good but small yield.

Wheat—Very little raised.

Rye—Very little raised.

Barley—Average quality but small yield.

Flax—Quality good

Buckwheat—Average.

Millet—Very little raised.

Sorghum—Very little raised.

Timothy—Quantity and quality good.

Clover—Very fair; condition good.

Prairie Hay—Very little.

Other Grains and Grasses—Timothy hay good and plentiful.

Potatoes—Good.

Vegetables—Good.

Apples—Scarce.

Other Fruits—Scarce

Cattle—Plentiful, with condition improving.

Horses—Excellent and quite plentiful.

Swine—Fine

Sheep—Few kept, but on the increase.

Poultry—Good and plentiful.

Bees—Scarce.

Drainage—Natural drainage good. Not much artificial drainage done yet.

Other Industries—Few.

Lands—Rapidly increasing in value.

Report of Fair—Held at New Hampton, September 14, 15, 16, 17, 1909. Considering the fair is just starting, it was good and satisfactory.

CHICKASAW.

W. F. GETSCH, NASHUA, OCTOBER 26, 1909.

General Condition of Crops and Season—Good.

Corn—Good; will average about forty bushels per acre.

Oats—Thin stand; good quality; average about twenty-five bushels per acre.

Wheat—Stand and quality good; average about twenty bushels per acre.

Rye—Excellent; quality good; average about twenty bushels per acre.

Barley—Quality fair; average about twenty bushels per acre.

Flax—None raised.

Buckwheat—Good quality, but very little raised.

Millet—Very little sowed, and most of it was such a light stand it was either cut for hay or plowed under.

Sorghum—Good, but not much raised.

Timothy—Very good.

Clover—Very good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Good, average about one hundred and twenty-five bushels per acre. Quite a number of farmers are increasing their acreage as it is a profitable crop.

Vegetables—Very good; excellent quality.

Apples—Very inferior and very small yield.

Other Fruits—Very good.

Cattle—Not as many cattle in this locality as last year. Farmers are getting better grade.

Horses—Farmers are raising more draft horses and getting rid of the smaller ones.

Swine—Short in this locality, presumably on account of high price of corn.

Sheep—Very few raised here.

Poultry—Considerable poultry raised here and is very profitable.

Bees—Did not do well this season.

Drainage—Farmers are beginning to see the importance of tiling their land.

Lands—Have increased in value from $5 to $10 per acre the last year and changing hands quite readily.

Report of Fair—Held at Nashua, September 7, 8, 9, 10, 1909. Although the weather was threatening the second and third days, the attendance was good and the receipts larger than last year. The fair was a success in every respect, regardless of the weather.

CLAYTON.

HENRY LUEHSEN, GARNAVILLO, OCTOBER 15, 1909.

General Condition of Crops and Season—Season backward. A good deal of rain in the spring and cold weather was a detriment to small grain.

Corn—A good average crop, about eighty per cent.

Oats—Not a big yield but of good quality.

Wheat—Very little raised but quality and yield good.

Rye—Not much raised.

Barley—Light crop of medium quality.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Up to the average.

Sorghum—Good crop; quality fair.

Timothy—Excellent crop.

Clover—Good crop.

Prairie Hay—Large yield.

Other Grains and Grasses—Good.

Potatoes—Good crop; quality good.

Vegetables—About up to the average.

Apples—Light yield and of poor quality.

Other Fruits—An average crop of good quality.

Cattle—The farmers are continually improving their herds, such as Short Horns, Herefords, Polled Angus and Jerseys. Some very fine stock was on exhibition at our fair.

Horses—Are still bringing top notch prices. Our county can boast of some very fine specimens.

Swine—One of the principal industries. Local breeders were all represented at our fair with some very fine specimens.

Sheep—This industry is growing yearly. Some of our farmers have flocks numbering from two to three hundred.

Poultry—A very profitable industry. The farmers are realizing a handsome profit from their flocks.

Bees—An average crop of honey.

Drainage—Natural.

Lands—Are continually increasing in price. Very little offered for sale.

Report of Fair—Held at National, September 7, 8, 9, 1909. The weather was not very favorable this year, consequently the attendance was not as large as in former years. The exhibits were about up to average.

CLAYTON.

F. J. GRESSLER, STRAWBERRY POINT, OCTOBER 26, 1909.

General Condition of Crops and Season—A good average crop raised. General prosperity seems to prevail throughout the farming communities. The weather during the early part of the season was cold and rainy; the dry weather later did some damage to high sandy land. Fall weather has been splendid and corn is maturing in fine shape.

Corn—Quality fair; yield thirty-five to forty bushels per acre.

Oats—Quality extra good; yield thirty to thirty-five bushels per acre. acre.

Wheat—Quality good; yield twenty to twenty-five bushels.

Rye—Very little raised here; yield about average.

Barley—Yield about half a crop.

Flax—Very little raised here.

Buckwheat—Very little raised; average crop.

Millet—Very little raised.

Sorghum—Very little raised.

Timothy—Good average crop, about one and one-half tons per acre.

Clover—Good average crop, about two tons per acre.

Prairie Hay—Good average crop, about one and one-half tons per acre.

Other Grains and Grasses—Fair yield.

Potatoes—Quality good; yield about one hundred bushels per acre.

Vegetables—Yield fair.

Apples—Quality fair; yield about average.

Other Fruits—Quality good; yield fair.

Cattle—Show a decrease of about five per cent in number raised; quality being improved. Cattle used and raised for dairying purposes here.

Horses—Average number raised; quality and condition good.

Swine—A decrease of ten per cent in number raised; generally healthy; quality good.

Sheep—Increase in number raised and kept in this county.

Poultry—Large increase in poultry raised.

Bees—Did not do well this year.

Drainage—Some tiling done but not as much as should be done.

Other Industries—Prosperous.

Lands—Conditions improving; land increasing in price. Average prices range from $50 to $125 per acre; $50 an acre land scarce and of inferior quality.

Report of Fair—Held at Strawberry Point, September 7, 8, 9, 10., 1909. Weather conditions unfavorable but all premiums were paid in full.

CLAYTON.

W. W. DAVIDSON, ELKADER, OCTOBER 7, 1909.

General Condition of Crops and Season—Good.

Corn—Large coop; good variety.

Oats—Fine quality; small yield.

Wheat—Good.

Rye—Good.

Barley—Excellent quality.

Flax—None raised.

Buckwheat—Good.

Millet—Good.

Sorghum—Fine crop.

Timothy—Large yield.

Clover—Abundant.

Prairie Hay—None.

Other Grains and Grasses—Large crops of everything.

Potatoes—Good quality but small yield.

Vegetables—Excellent.

Apples—Large yield.

Other Fruits—None.

Cattle—Good condition.

Horses—Fine and a great many of them.

Swine—Good class and plentiful.

Sheep—Good quality.

Poultry—Abundant.

Drainage—Good natural drainage.

Lands—Rapidly increasing in value.

Report of Fair—Held at Elkader Sept. 15, 16, 17, 1909. Fine weather and unusually large attendance.

CLINTON.

E. J. QUIGLEY, DEWITT, OCTOBER 12, 1909.

General Condition of Crops and Season—Good.

Corn—Generally good; low land not good.

Oats—Average about thirty-five bushels per acre.

Wheat—Practically none raised here.

Rye—An average crop. Not much raised in this locality.

Barley—Good.

Flax—None raised.

Buckwheat—Good; very little raised here.

Millet—Good crop.

Sorghum—None raised.

Timothy—Extraordinary good crop.

Clover—Very good crop.

Prairie Hay—Good crop.

Other Grains and Grasses—None.

Potatoes—Short crop, quality good.

Vegetables—Very good.

Apples—Short crop.

Other Fruits—Below an average crop.

Cattle—Quality good; average supply.

Horses—Quality good; supply exhausted.

Swine—All breeds of swine raised in abundance. Exhibit very large this year.

Sheep—Very few raised here; quality good.

Poultry—Many varieties raised; average supply this year.

Bees—Good year for bees.

Drainage—Much done here this year; both clay and cement tile used.

Other Industries—None.

Lands—Good; constantly increasing in price.

Report of Fair—Held at DeWitt, September 7, 8, 9, 10, 1909. Exhibits and attendance good. Improvements $800. All buildings in good shape and indebtedness very small.

CLINTON.

J. B. AHRENS, LYONS, OCTOBER 7, 1909.

General Condition of Crops and Season—Better than the average. The season was a trifle later but is advancing on account of the good weather at the present time. No damaging frosts to date.

Corn—About the usual yield; a better stand than last year; no damage by frosts.

Oats—Yield about eighty per cent.

Wheat—Good quality; more being raised here each year.

Rye—Fair to good quality; yield about ninety per cent.

Barley—Yield light and quality poor on account of rains.

Buckwheat—Good, but not so much raised.

Millet—None raised.

Sorghum—Very little but good quality.

Timothy—Very good crop; average about two tons per acre.

Clover—Very light on account of being killed last winter; about half a crop.

Potatoes—About eighty per cent of full crop, account of being too wet; yield fair, quality good.

Apples—Very scarce; about twenty per cent of yield.

Cattle—Are in good condition; prices good. Not many being fed on account of high price of feeders and corn.

Horses—Good ones very scarce and prices high.

Swine—An average crop; generally in good condition and healthy.

Sheep—A few flocks in this vicinity; not many being raised.

Poultry—An average crop; young ones bring good prices at markets.

Bees—Very few around here.

Drainage—Some drainage ditches in the western part of the county.

Other Industries—Doing a fairly good business and good wages to employees.

Lands—Very little being transferred. Prices on the whole have advanced within the last year, ranging from $120 to $150 per acre.

Report of Fair—Held at DeWitt, September 14, 15, 16, 17, 1909. Weather and attendance very good. Most of the departments were well filled with exhibits. Racing was good and fast with classes quite well filled.

CRAWFORD.

THOMAS RAE, ARION, OCTOBER 18, 1909.

General Condition of Crops and Season—Cold and freezing weather up to May 10th. The wheat and oats crop suffered considerably. Corn planted in fair condition, the soil warming up well, but much was drowned out by continuous heavy rains to July 12th.

Corn—Twenty per cent abandoned; the balance a fair yield and good quality.

Oats—Fair quality; average yield from eighteen to thirty bushels per acre.

Wheat—Good quality; average yield twelve to fourteen bushels.

Rye—Practically none raised.

Barley—Poor quality and color; yield about twenty bushels per acre.

Flax—None raised.

Buckwheat—None.

Millet—Very little raised.

Sorghum—Some raised for fodder, giving good yield.

Timothy—The heaviest crop of timothy ever seen in this county.

Clover—Heavy yield of splendid clover. Secured in fair condition.

Prairie Hay—Only a small amount of prairie grass left.

Potatoes—Light yield, fair quality.

Apples—Small yield on account of late frosts in spring.

Other Fruits—Raspberries and blackberries plentiful.

Cattle—In good condition all summer; pasturage excellent. Not so many as usual going into the feed lots on account of high priced corn.

Horses—Average condition; not so many colts as usual.

Swine—Healthy condition. Spring crop below the average; cold cloudy weather cut off a great many of the spring pigs.

Sheep—Not very numerous but flocks in a healthy condition.

Poultry—Spring chickens below the average in number.

Drainage—Surveys being made to have the Boyer River straightened to connect with Harrison County ditch now being dug.

Lands—Steady improvement in values, fair uplands ranging from $75 to $90 per acre and some reaching $100.

Report of Fair—Held at Arion, September 21, 22, 23, 1909. A successful fair, strictly agricultural. A steady advance in all classes of stock and grain exhibited. Poultry was well represented, giving evidence that people are interested in this great source of wealth. The culinary department made a fine showing. The educational exhibit, a new department added this year, was of interest and a great success and will be continued in the future.

DALLAS.

T. D. RITTGERS, DALLAS CENTER, JANUARY 29, 1910.

General Condition of Crops and Season—Crops were not up to the average on account of a wet spring and a drouth during the summer months.

Corn—A large acreage planted but conditions were such that the yield was below the average. Early frost and wet fall weather unfavorable to husking and cribbing. A large amount of corn in the field at this writing.

Oats—About an average crop.

Wheat—Winter wheat was good and a fair crop; very little spring wheat grown.

Rye—Mostly grown for seeeding and pasture for feeding cattle; not for grain crop.

Barley—Only a small acreage; average crop.

Millet—Very little sown.

Sorghum—Made a good yield for a forage crop; acreage is increasing each year.

Timothy—Heavy crop and put up in good condition when put in barns but when put in stacks it was badly damaged by fall rains.

Clover—Very good crop and put under cover in good condition. Stacked clover in bad condition. Very little hulled for seed but was of good quality.

Prairie Hay—Almost a crop of the past; only a limited amount on very low, undrained land.

Potatoes—Mostly grown for home use; crop was fair in quality and average but the soil in this county is not strictly adapted to the raising of potatoes.

Vegetables—Very good; plenty for home use.

Apples—Not very satisfactory; mostly grown for home use. Quality was poor and the October freeze found most of the fruit on the trees.

Other Fruits—Cherries were very light crop; no peaches or pears and but a few gooseberries.

Cattle—Not very plentiful as the high prices for the half fat kind last spring took most all of them out of the county. Feeders have been slow filling up the yards on account of the condition of the corn crop. Less than average on feed now.

Horses—On account of high prices there is an increased interest taken in the breeding of horses, especially the good heavy kind. More care given to the breeding of good mares the past year than for a number of years past.

Swine—The pig crop was very poor on account of the wet, cold weather at farrowing time. High prices have taken everything fit for market; almost to a shortage.

Sheep—Sheep are increasing. The woven wire fence has made sheep growing possible in Iowa. Young farmers are taking quite an interest in the sheep industry.

Poultry—Remunerative prices have put a new impulse to the business —other than turkeys. The hens will cackle with a new spirit when warm days come; not 25 cent hens but dollar hens.

Bees—Season not favorable for bees; still strong colonies gave fair returns.

Drainage—Increased interest in drainage under the new law. A more systematic work will give large returns for money invested and a large acreage of rich new soil will be brought under cultivation.

Other Industries—Concrete and cement work increasing rapidly.

Lands—Have increased in money value by leaps and bounds and it will require better farming to pay interest on present investments. We must farm better and increase the fertility of the soil in order to leave good land and not abuse land for future generations.

DAVIS.

H. C. LEACH, BLOOMFIELD, OCTOBER 12, 1909.

General Condition of Crops and Season—General condition of crops good; all kinds of grain and vegetables fully matured.

Corn—Large acreage; good quality; about eighty per cent of full crop.

Oats—Ordinary acreage; quality and yield good.

Wheat—Small acreage; quality and yield excellent.

Rye—Small acreage; yield good.

Barley—None raised.

Flax—None raised.

Buckwheat—Acreage and yield small.

Millet—Quite a good deal sowed; quality of seed and hay good.

Sorghum—Small acreage; quality good.

Timthy—Yield not as large as usual; quality good.

Clover—Fair yield; quality good.

Prairie Hay—Practically none grown.

Other Grains and Grasses—All good yield and fine quality.

Potatoes—Only fair yield; quality excellent.

Vegetables—Generally good.

Apples—Yield good in some localities, in other localities the crop was a failure owing to late frosts; quality only fair.

Other Fruits—Strawberries, blackberries and raspberries yield good, cherries and plums fair, grapes good, peaches and pears a failure.

Cattle—Not a large supply of cattle; quality good, mostly Short-Horns with Polled Angus a close second, quite a good many Jerseys.

Horses—A great many raised, mostly draft breeds and of good quality; quite an interest taken in the raising of draft horses in this county.

Swine—Large quantity of hogs raised here and a great deal of interest taken in breeding of same.

Sheep—Farmers are becoming interested in sheep raising, which appears to be a very profitable business, especially on the rolling land.

Poultry—Is fast becoming one of our most profitable industries; everybody on the farm now raise poultry.

Bees—Quite an interest in bees the last few years; generally seems profitable.

Drainage—Not much done in this respect so far but the question is being agitated quite a little of late.

Other Industries—This being an agricultural county exclusively we have no manufactures of any consequence; quite a good deal of coal in the north part of the county but little worked.

Lands—Good farms average in price from $60 to $125 per acre; grazing land $35 to $50 per acre.

Report of Fair—Held at Bloomfield, September 14, 15, 16, 17, 1909. By far the largest fair in the history of the county, being the fiftieth annual fair. Wednesday was celebrated as "Home Coming Day," and was enjoyed by all.

DELAWARE.

T. WILSON, MANCHESTER, OCTOBER 20, 1909.

General Condition of Crops and Season—Crops have done fairly well this season and will make a good average. While too much moisture in the early part of the season and a continued dry spell later on hurt the corn crop, and also to some extent the potatoes, yet conditions are very favorable in this county.

Corn—A very good crop all over the county; is drying up nicely and husking has commenced.

Oats—Oats are very heavy this year, better than for several years; yield fair.

Barley—Quality good but yield light; crop was a disappointment when threshed.

Sorghum—Not much raised but making excellent quality of syrup.

Timothy—Good fair crop and harvested in excellent condition.

Clover—Good crop and secured in good condition.

Potatoes—Lighter than usual, drought and bugs hurt the crop; quality fair.

Cattle—Cattle have been healthy and prices good; not very plentiful.

Horses—Scarce; all classese of good horses are in demand, and prices for good animals, especially heavy teams, are very high.

Swine—Hogs have been healthy and in good demand; pig crop only fair; not many fat hogs in the county at present.

Sheep—The sheep business is looking better; several very fine flocks headed by imported rams in the county.

Poultry—The poultry business is doing nicely; numerous flocks of pure bred fowls. Outside poultry and egg shippers in almost every town.

Drainage—Taking up more of the farmers' attention; a good amount of tile is being laid this season.

Lands—Farm lands steadily raising in price and are held firmly at advanced prices, mainly on account of the high average of crops maintained.

Report of Fair—Held at Manchester, August 31, September 1, 2, 3, 1909. The displays in all departments were excellent, but on account of continued rains the fair was not a financial success.

DES MOINES.

HORACE PATTERSON, BURLINGTON, JANUARY 20, 1910.

General Condition of Crops and Season—Inferior crops on account of unfavorable weather.

Corn—Average yield per acre 40 bushels, price 50 to 65 cents per bushel. Seventy per cent damaged by high winds in September and frosts in October; also by excessive rains in November. Twenty-five per cent of the corn in the fields at this writing covered with snow and ice.

Oats—Average yield per acre, 23 bushels, price 45 cents per bushel; inferior quality.

Wheat—Average yield per acre, 20 bushels; good quality and price ranges from 95 cents to $1.00.

Rye—Winter average yield per acre; price 65 to 70 cents per bushel; good quality.

Barley—Average yield; quality fair; price 50 cents per bushel.

Flax—None raised.

Buckwheat—Average yield.

Millet—All harvested for hay; none threshed; average yield per acre; good quality and all consumed at home. Price of seed per bushel $1.50 and crop increasing.

Sorghum—Average yield per acre; price 60 cents per gallon; good quality; crop decreasing although a number of acres are grown for forage and fodder.

Timothy—Average yield of $1\frac{1}{4}$ tons per acre; price ranges from $12.00 to $16.00 per ton; good quality.

Clover—Average yield of $1\frac{1}{2}$ tons per acre; many fields were pastured too close and late and were winter killed; price $12.00 to $14.00 per ton.

Prairie Hay—None grown, except Ram-Rod on low lands; price $6.00 to $8.00 per ton.

Other Grains and Grasses—Alfalfa; average yield of 5 tons per acre; three cuttings; acreage small but on the increase.

Potatoes—Average yield per acre; price 55 cents per bushel; potatoes given the formaldehyde treatment were smoother and about one week earlier than those not treated. 5,000 bushels sweet potatoes raised; price $1.00 per bushel.

Vegetables—Market gardeners are raising over 500 acres of vegetables for market and canning factories.

Apples—Average crop but of inferior quality; late varieties injured by frost in October. Eighty per cent of the apples were made into cider and sold at 6c per gallon.

Other Fruits—Small fruits in abundance; grapes one-fourth crop and no peaches.

Cattle—Principal breeds are Polled Durhams, Herefords, Polled Angus, Holstein and Jerseys. 21,153 reported for taxation; value $576,804.00.

Horses—Principal breeds: Standard Bred Trotters, Thoroughbred runners, Percheron, Clydesdale, English Shire, French and German Coach, and Morgans. Stallions are mostly imported. Horses are rapidly improving; average price from $150.00 to $200.00 per head. 8,787 horses assessed, value $802,419.00.

Swine—Poland China, Berkshire, Chester White and Duroc Jerseys are the principal breeds. Supply below normal. Price of fat hogs $7.50 to $8.20 per hundred. 29,868 hogs assessed, value $217,962.00.

Sheep—South Down, Cotswold and Merino are the favorite breeds. 2,509 assessed, value $9,392.

Poultry—A paying industry; poultry and eggs being quite a large source of revenue with every farmer that goes into it.

Bees—A great deal of attention is given to the culture of bees; quality of honey very inferior this season, being black and bitter; price 15 cents per pound.

Drainage—The drainage system which has just been completed has restored to the farms about 24,000 acres of very rich land.

Other Industries—Progressing.

Lands—Farms are increasing in value very rapidly; selling from $80 to $200 per acre, according to location and improvements. Much attention is given to permanent roads; larger and better houses; barns, etc.

Report of Fair—No fair held in county.

DICKINSON.

J. H. GREGORY, SPIRIT LAKE, JANUARY 24, 1910.

General Condition of Crops and Season—The spring of 1909 was more favorable than south and east. Under favorable conditions oats and barley made a fair crop, not a large yield but excellent quality.

Corn—Good crop but fall rains prevented its drying perfectly, thus making a shortage of seed corn. Yield was average; many acres yet in the field.

Oats—Best quality raised for several years past; yield about 35 bushels.

Wheat—Good yield and fine quality; more raised than usual.

Rye—None grown.

Barley—Good yield; fair quality; not much grown.

Flax—None grown.

Buckwheat—None grown.

Millet—Grown in small patches; good crop.

Sorghum—None grown.

Timothy—Good crop and saved in good condition.

Clover—Acreage increasing; good crop.

Prairie Hay—Good quality; fair yield; small acreage.

Potatoes—Good yield and quality but many injured by October freeze.

Vegetables—Good yield and of good quality.

Apples—Summer and fall apples good crop; few winter apples grown.

Cattle—Owing to high price of feed more attention is given to cows and dairy interests than growing beef cattle.

Horses—Each year sees a marked improvement in quality of horses and they sell at high prices.

Swine—A material reduction in the number of hogs produced in this county; quality at market time very good.

Sheep—The sheep industry is gaining ground and each year is found a greater number of sheep, mostly of the Shropshire breed.

Poultry—Poultry is the most popular and profitable industry in the county.

Bees—Few bees in the county.

Drainage—Great interest is manifested and much money is being expended by the county and individuals in draining farms.

Lands—Lands are being put in a higher state of cultivation and consequently are becoming more valuable.

Report of Fair—The first county fair was held at Spirit Lake October 8-9, 1909. The exhibits of stock, grain, etc., was very good. The one-half mile track was in good shape and racing was good.

DUBUQUE.

R. STILLUUMKES, DUBUQUE, 1909.

General Condition of Crops and Season—General condition of crops about average but the early part of the season was too wet and cold and was especially detrimental to corn inasmuch as it retarded its growth.

Corn—An average yield of poor quality; much damage done by cut worms.

Oats—Good with an average yield of about 78 per cent.

Wheat—Too little raised to form an estimate, however, the quality was good.

Rye—Quality fair; yield 70 per cent.

Barley—Quality good; yield 72 per cent.

Sorghum—Fair.

Timothy—Very good.

Clover—Total failure.

Prairie Hay—Number one crop.

Potatoes—Good to fair; average yield 75 per cent.

Vegetables—All kinds number one.

Apples—Very poor; yield about 35 per cent.

Other Fruits—Cherries and plums almost a failure; poor yield of grapes but all other berries a good crop.

Cattle—Good condition.

Horses—Good condition.

Swine—Fair.

Sheep—Good.

Poultry—Number one.

Bees—Poor.

Lands—Much damage done by floods.

EMMET.

A. J. RHODES, ESTHERVILLE, OCTOBER 29, 1909.

General Condition of Crops and Season—General condition good considering the cold, wet spring and the drouth early in the fall. Considerable fall plowing is being done; fall pastures are good and stock in good condition.

Corn—Yield good. Numerous replantings required on account of successive rainfall but many acres matured beyond expectations.

Oats—Generally good in weight but light in yield.

Wheat—Very little raised.

Rye—Not extensively raised but crop was fair.

Barley—About the usual acreage; yield about two-thirds of an average crop.

Flax—Very little raised.

Buckwheat—Very little raised.

Millet—Good, but small acreage.

Sorghum—None raised.

Timothy—Excellent crops.

Clover—Very good and put up under favorable conditions.

Prairie Hay—Small acreage.

Other Grains and Grasses—Blue grass is the main pasturage and is good.

Potatoes—Good yield and good price.

Vegetables—Good crops.

Apples—A good crop of summer and fall apples.

Other Fruits—Small fruits light; good yield of grapes.

Cattle—In fine condition; several large herds of fine stock. The usual number not being fed on account of high price of corn.

Horses—A good class of draft horses and some very good roadsters; prices high. Attention is being paid to the better breeds of draft horses.

Swine—High priced and not many in the county.

Sheep—Not many raised.

Poultry—Good prices.

Bees—Very few stands in the county.

Drainage—Much drainage being done, both with tile and open ditches.

Other Industries—In flourishing condition. Brick, tile and cement works doing a prosperous business.

Lands—Great demand and prices advancing rapidly.

Report of Fair—Held at Estherville, September 8, 9, 10, 11, 1909. A great success; the weather was pleasant and the attendance large. Large exhibits; free attractions first class.

FAYETTE.

E. A. MCILREE, WEST UNION, OCTOBER 7, 1909.

General Condition of Crops and Season—The year has been in many ways remarkable for its absence of violent storms or very unusual weather conditions. The quality of all kinds of grain and all kinds of fodder is exceptionally good, but the yield of fruit and berries and a great deal of garden stuff has not been up to the average of recent years.

Corn—Corn at this writing looks to be one of the best crops in actual value for feeding purposes or market for many years.

Oats—Early sown oats generally thin in stand owing to cold weather after seeding, but in most cases quality and yield are above the average for many years.

Wheat—Small acreage in this county but the quality of grain this year was good; the stand was generally light.

Rye—A good crop and matured very favorably.

Barley—Generally a thin stand, but the grain was of fine quality and the yield good.

Flax—Not much grown in this county and crop was quite light on account of excessive rain in the spring and the great heat about ripening time.

Buckwheat—A good crop except on quite low places; about twice as much sown as in former years.

Millet—Little sown in this county and crop cut short by dry weather during the latter part of the season.

Sorghum—Very little raised.

Timothy—A fair crop, both for hay and seed.

Clover—Rather a poor crop and the new seeding has been greatly damaged by drouth; practically no second crop for hay or seed.

Prairie Hay—Of fine quality but moderately light yield; only a very little cut for hay.

Potatoes—About two-thirds of a crop in field, but exceptionally good quality and free from rust or rot.

Vegetables—Not a very large yield and considerably damaged by drouth. Early beets, turnips and cabbage are woody and of poor quality.

Apples—Less than half a crop and of inferior quality, being quite wormy and damaged by hail in the early part of the season.

Other Fruits—Not more than half a crop and in many cases much less; not a very good quality, excepting strawberries.

Cattle—Have done exceptionally well excepting where pastures were overstocked. No disease to speak of and pastures have been good.

Horses—Considerably increased in numbers and free from distemper or other diseases. Farmers generally are raising as many colts as possible; great demand for good horses at very high prices.

Swine—Not more than two-thirds the usual stock on hand. Abnormal prices have cleared everything marketable.

Sheep—Sheep have had a good year but have not increased in numbers very much on account of high prices for other kind of stock more easily handled.

Poultry—Poultry in this county is gradually being increased and is very profitable.

Bees—Have not done well the past year.

Drainage—Not much attention paid to drainage heretofore, the county being quite rolling but some new tiling has been put in and the subject is receiving considerable attention.

Other Industries—No new industries of consequence have been established, excepting repair shops for automobiles.

Lands—Land has changed hands quite freely and advanced about $5 per acre.

Report of Fair—Held at West Union, September 7, 8, 9, 10, 1909, being about a week later than usual. First two days were rainy but the last two were better and the attendance was very large. Exhibits fully up to recent years and some departments unusually fine. Change has been made from a racing program to more of an amusement program. Premiums and expenses paid in full and a small surplus on hand. A large stock barn costing about $1,500 and a number of other improvements of permanent character have been made. The public in general was well pleased with the fair and the management.

FAYETTE.

C. H. KNOS, OELWEIN, OCTOBER 21, 1909.

General Condition of Crops and Season—Spring late; corn backward during the fore part of the season and affected by drouth the latter part of July and August, late fall and favorable weather has made corn a fairly good crop.

Corn—Crop fair; yield about thirty bushels per acre.

Oats—Quality good; yield light.

Wheat—Not much sowed.

Rye—None.

Barley—Good.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—Good.

Clover—Good.

Potatoes—Fairly good.

Vegetables—Good.

Apples—Poor.

Other Fruits—Poor.

Cattle—Principally dairying. Calves nearly all vealed. Dairy cows scarce; selling from $5 to $10 higher than ever before.

Horses—Not many more than needed in the county. Many good colts raised during the season.

Swine—Young crop light.

Sheep—Not many in county.

Poultry—Poultry business encouraging.

Drainage—Not much tiling being done.

FLOYD.

JOHN GAILS, MARBLE ROCK, IOWA, 1910.

General Condition of Crops and Season—The extremely wet weather was very detrimental to the various crops raised in this county with the exception of wheat, barley, rye, and oats in a small portion of the county. The cron crop suffered greatest damage on account of heavy rains, high winds and hail.

Corn—Quite a shrinkage in the crop of corn was caused by the partial drouth in the valley of the Shellrock and Cedar River districts.

Oats—Crop was very variable; depending upon the time of sowing and the kind of soil.

Wheat—Crop was quite fair; both in quality and quantity but the acreage was very small.

Rye—The rye crop was fair throughout the county but the acreage was small.

Barley—Very fine and of good quality; acreage small.

Flax—Flax is neglected.

Buckwheat—Would all go into one good meal.

Millet—Quite a good crop.

Sorghum—Is out of date for use in this county.

Timothy—Fair crop both for hay and seed.

Clover—Clover produced no seed but the hay crop was fine.

Prairie Hay—What there is in the county was fine in quality but of light yield.

Potatoes—Very poor crop; except where the soil was such that it could withstand the rain and drouth.

Vegetables—Vegetables of all kinds were very productive and of good quality for the entire season.

Apples—Very few and the quality poor.

Other Fruits—Strawberries, raspberries and ground cherries were very productive.

Cattle—Cattle fed well on good pastures; no decrease although lightning did some damage in some parts of the county.

Horses—Horses were privileged to feed on good pastures and doing fine.

Swine—To my personal knowledge there was quite a good supply of pigs running on good pastures, minus corn or other grain to produce fat.

Sheep—Sheep are not numerous in this county although the soil and climate are all right.

Poultry—The poultry industry is quite marked in the county and would be profitable if it were not for the high price of grain and feed of all kinds and also some disease.

Bees—Not many bees.

Drainage—Drainage has fairly started in the county with good results.

Other Industries—Progressing.

Lands—Lands are more than the average when it comes to the production of grains; lots of running water. Price ranges from $65.00 to $125.00 per acre.

FRANKLIN.

SHERWOOD A. CLOCK, HAMPTON, OCTOBER 25, 1909.

General Condition of Crops and Season—Very good. Season drier than for about five years and the whole season was warmer.

Corn—Quality good; yield thirty to ninety bushels per acre, average about fifty-five. Yield will be shortened on account of corn being blown down.

Oats—Fair crop, twenty to fifty bushels per acre; overrun in weight. straw medium length.

Wheat—Very little raised here. Good yield report on the small acreage planted.

Rye—None raised here.

Barley—Good yield, good quality, small acreage.

Flax—Practically none raised in the county.

Buckwheat—Poor yield but good quality; too dry for good crop.

Millet—Small acreage.

Sorghum—None raised.

Timothy—Good crop but not as heavy as last year, sowed mostly with clover; quality good.

Clover—First crop very good; second, crop short on account of drouth; acreage large.

Prairie Hay—Quality good; yield about an average; drouth affected some portions.

Other Grains and Grasses—Good average year.

Potatoes—Average yield; some damaged by frosts; acreage increasing every year.

Vegetables—Favorable season for all gardens.

Apples—Very poor crop, almost every apple blighted.

Other Fruits—Strawberries fair; other crops short and of poor quality.

Cattle—Quality improving. Demand exceeds local supply; northern cattle shipped in to feed. More attention being paid to dairying; milk output on big increase.

Horses—Good quality. Prices high; eastern buyers purchase the best draft stock for shipment; price averages about $150 for good three-year-olds.

Swine—Smaller crop on account of high price of corn; quality good; big demand for shoats.

Sheep—Very few in the county; most all shipped in, rough fed and then marketed.

Poultry—Quality improving each year; wet spring caused big death rate of young stock; output not as large as usual.

Bees—Few kept. Honey crop of good quality and medium quantity.

Drainage—Ten drainage districts established in this county; large amount of tiling going on.

Other Industries—Sugar beets quite an industry; average twelve tons per acre, $5 per ton f. o. b. Hampton. Soil well adapted for beets and about five hundred acres raised; one thousand acres to be raised in 1910.

Lands—Value raised within twelve months. Average price around $100 per acre for good improved farms, $65 to $85 for medium quality.

Report of Fair—Held at Hampton, September 28, 29, 30, 1909. One of the best fairs ever held in the county; attendance large and everyone well satisfied. Displays in every department exceeded room for same; premiums paid amounted to double the amount ever paid before. Corn exhibit was fine; about one hundred entries. Many entries in the stock department; quality good. Ladies' department overflowing with extra fine exhibits. The fair was a success financially and otherwise.

GREENE.

WILLARD ZELLER, COOPER, 1910.

General Condition of Crops and Season—During the early part of the season the ground was in very god shape for seeding but during corn planting time it commenced to rain and some of the corn was not planted until the middle of June. Heavy rains did lots of damage to the growing crop.

Corn—Below the average in yield and of very poor quality on account of heavy rains and hard winds.

Oats—Light in yield but of fair quality; about 25 bushels per acre.

Wheat—Very little sown but that was of fair quality.

Rye—Very little sown.

Barley—Good but little sown.

Flax—None.

Buckwheat—None.

Millet—Small acreage but quality and yield good.

Sorghum—Very little grown but of good quality.

Timothy—Good yield and fine quality; not enough raised to supply the demand; hay being shipped in.

Clover—Badly winter killed where the second crop was taken for seed.

Prairie Hay—Small acreage but of fair quality.

Other Grains and Grasses—Fair.

Potatoes—Early potatoes fine; late no good; not enough raised to supply the demand.

Vegetables—Good.

Apples—Crop light on account of early frosts.

Other Fruits—Light crop of plums; strawberries fine; no peaches.

Cattle—In fine condition and a good grade raised in the county. We have a number of pure bred herds.

Horses—A fine grade of draft horses raised and selling high.

Swine—Not so many raised this year on account of cholera last season, but what we have is of good quality and in good condition.

Sheep—Few but good.

Poultry—A large quantity of poultry raised and of good quality.

Bees—Very few raised but they are doing fairly well.

Drainage—Great increase in the tile drainage and a good many county ditches being put in, thus making fine farming lands, the best that can be had.

Other Industries—Prosperous.

Lands—High in price and still advancing. Sales in this vicinity have been made from $80.00 to $150.00 per acre during the last year.

Report of Fair—No fair held in this county.

FREMONT.

J. F. C. FINNELL, HAMBURG, 1909.

General Condition of Crops and Season—Early spring was very wet followed by long dry weather.

Corn—About the same yield as last year.

Oats—Good.

Wheat—Good.

Rye—Good.

Barley—Fair.

Flax—None grown.

Buckwheat—None sown only for bees.

Millet—Good crop.

Timothy—Fair.

Sorghum—Good.

Clover—Fair.

Prairie Hay—Light.

Other Grains and Grasses—Poor.

Potatoes—Excellent yield.

Vegetables—Good.

Apples—Large crop and disposed of at good prices.

Other Fruits—Strawberries, raspberries and blackberries were plentiful.

Cattle—Good condition.

Horses—Fair condition.

Swine—Practically all healthly in county.

Sheep—Good; farmers are keeping more sheep.

Poultry—Good; high prices have bettered the quality of poultry.

Bees—Good; increasing in number.

Drainage—Several large drainage canals have been completed in the county and some tiling has been done.

Other Industries—Cider factory at Hamburg produced 1,700 barrels of cider this season.

Lands—Have increased about 10 to 25 per cent in value.

Report of Fair—Hamburg fair held September 15-17, 1909.

GRUNDY.

L. M. HAWN, GRUNDY CENTER, OCTOBER 20, 1909.

General Condition of Crops and Season—Season rather backward and dry. Small grain started slow and was a light crop but of good quality; general conditions satisfactory.

Corn—Corn was generally late but fine weather the fore part of the season and September has matured it in good shape.

Oats—Average thirty bushels per acre; quality good.

Wheat—Small acreage; yield fairly good.

Rye—None raised.

Barley—Crop very light and of poor quality.

Flax—None raised.

Buckwheat—None raised.

Millet—Only small amount grown.

Sorghum—Very little raised.

Timothy—Good crop.

Clover—Crop very heavy.

Prairie Hay—No prairie hay; a very little slough hay but of poor quality.

Other Grains and Grasses—Blue grass is the main pasturage and is always good.

Potatoes—Very large acreage; yield from eighty to two hundred bushels per acre.

Vegetables—Fair crop.

Apples—Very poor crop.

Other Fruits—Light crop.

Cattle—In good condition; very few being fed on account of prevailing price of corn.

Horses—Good grade; prices exceellent.

Swine—About the usual number raised; generally free from disease.

Sheep—Not many in the county but of good quality and raised very successfully.

Poultry—High in price; crop about the average in numbers and quality.

Bees—Not many; honey crop very short.

Drainage—More drainage every year; tile factories behind with orders.

Other Industries—Two tile and brick factories running at full capacity most of the time.

Lands—Rolling prairie. Values remain steady, prices ranging from $120 to $175 per acre; quite a number of sales to eastern buyers.

Report of Fair—Held at Grundy Center September 21, 22, 23, 1909. The weather was good and the attendance large. All departments were well filled and the fair was a success in every way.

GUTHRIE.

THOMAS E. GRISELL, GUTHRIE CENTER, OCTOBER 20, 1909.

General Condition of Crops and Season—Early part of the season was unfavorable to a full crop by reason of excessive rains and in August the crop was cut short by drouth.

Corn—On account of the late spring fifty per cent of the corn was planted late in the season and all was poorly cultivated. Notwithstanding this an average crop will be harvested. A hard wind storm in September blew down the corn, making it hard to gather.

Oats—Yield from twenty to thirty bushels; quality good.

Wheat—Not much sown.

Rye—Not enough sown to estimate.

Barley—None raised to speak of.

Flax—None.

Buckwheat—None.

Millet—Only sown on land too wet to raise other crops.

Timothy—A fine crop and saved in good condition.

Potatoes—The drouth in August cut the crop short.

Apples—Small crop.

Report of Fair—Held at Guthrie Center, September 28, 29, 30, and October 1, 1909. In point of attendance it was the most successful fair in the history of the society; for the first time in many years the fair was favored with beautiful weather. A full exhibit in all departments.

HAMILTON.

JAMES W. ADAMS, WEBSTER CITY, JANUARY 22, 1910.

General Condition of Crops and Season—Crops this year are in general above the average.

Corn—Corn in this vicinity is very good; about one-third of the crop is still in the field on account of being snowed under.

Oats—Very good quality and yielded about 37¼ bushels per acre.

Wheat—Very good quality and yielded more per acre than has been usual for a number of years.

Rye—Good quality but small acreage.

Barley—Very little sown compared with other years.

Flax—About average yield but many acres were partly lost on account of heavy rains.

Buckwheat—Neglected in this county.

Millet—Good season for millet; quality and quantity good.

Sorghum—Crop a little heavier than usual but the quality not so good on account of wet weather.

Timothy—Very good; large yield; good season; put up in good condition.

Clover—Good yield; much larger crop than common.

Prairie Hay—Very few acres as compared with a few years ago but the quality was good.

Other Grains and Grasses—Alfalfa grown.

Potatoes—Not as large a crop as usual nor was it of as good quality.

Vegetables—Season was very favorable for all kinds of vegetables; yields very good.

Apples—Yield somewhat short but the quality good.

Cattle—Owing to the fine pastures and meadows the cattle did very well this season.

Horses—The horse industry has not been neglected in this vicinity. Many farmers farming with horses costing from $200 to $300 each.

Swine—The city markets will explain the hog question in a very few words.

Sheep—This is an industry that has long been neglected and if farmers would interest themselves in raising sheep of a good breed nothing would be more profitable on farms.

Poultry—Very active interest taken in poultry raising; owing to the high price of both eggs and poultry.

Bees—Season too wet for the bees to produce much honey.

Drainage—Progressing.

Lands—Many farms changing hands; prices ranging from $150 to $200, owing to location.

Report of Fair—No fair held.

HANCOCK.

JAMES L. MANUEL, BRITT, OCTOBER 10, 1909.

General Condition of Crops and Season—Owing to the continued [illegible] cold spring the oats and barley crops are small; corn is very irregular.

Corn—Two-thirds of an average crop.

Oats—Half a crop.

Wheat—Three-fourths of a crop.

Rye—Full crop.

Barley—Two-thirds of a crop.

Flax—Half a crop.

Buckwheat—Half a crop.

Millet—Full crop.

Sorghum—None.

Timothy—Good.

Clover—Hay an average; seed very light.

Prairie Hay—Good average.

Potatoes—Good crop.

Vegetables—Good.

Apples—Average.

Other Fruits—Average.

Cattle—About the same number on feed. More milking done every year.

Horses—Average number on hand; prices high.

Swine—Not as many as usual owing to the scarcity of corn for two years.

Sheep—About the same, probably some increase.

Poultry—Increasing owing to the extraordinary price of poultry and eggs.

Bees—About the same as usual.

Drainage—Much drainage being done and tile cannot be supplied fast enough.

Other Industries—All prosperous.

Lands—Seems to be a general increase price of all lands.

Report of Fair—Held at Britt, September 21, 22, 23, 24, 1909.

HARDIN.

H. S. MARTIN, ELDORA, OCTOBER 20, 1909

Corn—Fair but badly blown down.

Oats—Average.

Wheat—About average crop.

Barley—Good.

Sorghum—Poor.

Timothy—Good.

Clover—Good.

Prairie Hay—Good.

Potatoes—Half a crop.

Vegetables—Fair.

Apples—Poor.

Other Fruits—Below the average.

Cattle—Average condition.

Horses—Average condition.

Swine—Good; no disease.

Sheep—Few raised.

Lands—From $80 to $150 per acre.

Report of Fair—Held at Eldora, Sept. 14, 15, 16, 17, 1909. A heavy rain fell on the night of the 14th but weather was fine the balance of the time.

HARRISON.

W. H. WITHROW, MISSOURI VALLEY, OCTOBER 27, 1909.

General Condition of Crops and Season—Weather conditions have been very favorable.

Corn—Again an increased acreage, owing largely to the establishment of first class drainage systems on the west side of the county. Reports from all parts of the county indicate that corn is out of danger of frost.

Oats—A little more than the usual acreage, with good yield and fair quality.

Wheat—An increased acreage in fall wheat and a good crop, but not so heavy as last year owing in part to absence of rain at the right time.

Rye—Usual acreage, with fair yield and quality.

Barley—Small acreage but will compare favorably with former crops.

Flax—Very little raised but quality is very good.

Buckwheat—Small acreage but of good quality and yield.

Millet—A very good crop and well matured without damage from rain; quality and yield about the same as heretofore, owing probably to the fact that alfalfa is supplanting millet with many farmers.

Sorghum—Acreage about an average with last year; quality and yield good.

Timothy—A very good crop with acreage about the average; quality and yield very good, with no rains to ruin it as last year.

Clover—About the usual acreage; fair crop.

Prairie Hay—A very good crop in some places but hardly up to the average over the county, owing to light rains all through the summer.

Other Grains and Grasses—Alfalfa appears to be growing in demand for cattle feed and many farmers have supplied themselves abundantly for winter feeding.

Potatoes—About the average acreage; yield not so large as usual but of the ordinary quality.

Vegetables—All kinds very good in quality, although tomatoes did not mature very early owing to dry weather and heat.

Apples—A large crop with prices much higher than usual.

Other Fruits—Fair yield of small varieties; too dry for small fruit.

Cattle—Not many fed during the summer owing to the high prices for feeders, and not the usual number will be fed during the coming winter.

Horses—Are in demand and good grades bring good prices; "scrubs" are not much in demand and sell for lower prices than last year. Farmers are beginning to see the advantage of raising well bred horses.

Swine—This county produces some of the best hogs that can be raised anywhere. Exhibits at the fair this year were the best in the history of the society and more will be shown next year.

Sheep—Very few raised and not so many being fed as usual.

Poultry—Not many full blooded fancy chickens are raised but common varieties are in good demand both for home consumption and for market; more might be marketed with good profit to the producer.

Bees—Did very well the past summer, producing good honey of very good quality.

Drainage—The drainage systems in the western part of the county have been a great benefit to all the county; another drainage system contracted for.

Other Industries—We have one canning factory; its output has been materially increased this year and contracted for at good prices by wholesale dealers at the large western markets.

Lands—Values continue to advance, some sales being reported at over $100 per acre and none at less than $45 per acre.

Report Fair—Held at Missouri Valley, September 7, 8, 9, 1909. Inclement weather interfered with the attendance and the fair was not a financial success but arrangements were made to pay all premiums in full. Exhibits in live stock departments were fine, particularly in the swine department. Good order was maintained and there were no objectionable shows on the grounds.

HENRY.

I. W. EDWARDS, MT. PLEASANT, OCTOBER 24, 1909

General Condition of Crops and Season—Weather conditions generally good except for extreme dryness in August.

Corn—Yield about seventy-five per cent. Acreage larger than usual but extreme dry weather cut the crop short; greater acreage of sweet corn.

Oats—Not quite up to the average.

Wheat—Not extensively raised but yield and quality good.

Rye—Not extensively raised but better than average.

Flax—None raised.

Buckwheat—Very little, if any, raised.

Millet—Acreage not large; light crop, too dry.

Sorghum—Good. Not generally raised.

Timothy—Good crop.

Clover—Good crop.

Prairie Hay—None.

Other Grains and Grasses—Blue grass is the main pasturage and is very good.

Potatoes—Yield better than average.

Vegetables—Good.

Apples—Crop variable; not very good. Large amount lost by freezing.

Other Fruits—Practically no peaches, good crop of berries; other fruits a fair yield.

Cattle—Not extensively fed; in general good condition as pastures have been good.

Horses—A splendid class of draft horses raised in this county, also some roadsters and a very few saddle horses. Mules are being more generally used and raised.

Swine—Large number raised and in good condition.

Sheep—Not quite as large number as usual but in good condition.

Poultry—Large amount of poultry raised; returns better than ever.

Bees—Quite a number kept but yield of honey poor; too dry.

Drainage—Good. Considerable tiling being done.

Other Industries—Tile and brick works and stone quarries doing a prosperous business. Canning factory doing a fair business.

Lands—Prices high, averaging from $75 to $200 per acre.

Report of Fair—Held at Mt. Pleasant August 17, 18, 19, 20, 1909. A very successful and satisfactory meeting. Exhibits of fruit and farm products fair; stock exhibit light, due to extreme heat, but of splendid quality. Racing was exceptionally good. Attendance was large. All expenses paid, including premiums, and a surplus left.

HENRY.

A. L. BERGSTEN, WINFIELD, OCTOBER 21, 1909.

General Condition of Crops and Season—Crops fair and of good quality, with the exception of some late corn. The early part of the season was wet and the later extremely dry.

Corn—Some soft corn; yield about twenty-five per cent below normal.

Oats—Fair average crop; good quality.

Wheat—Larger acreage than usual with good yield and quality.

Rye—Very little.

Barley—Very little.

Flax—None.

Buckwheat—None.

Millet—Very scarce.

Sorghum—None to speak of.

Timothy—Good quality and fair yield.

Clover—Good quality.

Prairie Hay—None.

Potatoes—Fair average yield; nice quality.

Vegetables—Fair.

Apples—Very scarce.

Other Fruits—Good average crop except peaches and pears.

Cattle—Few on feed.

Horses—Good number and extra quality; selling high.

Swine—Light crop.

Sheep—Very few.

Poultry—Good average crop.

Drainage—Good.

Bees—Very few.

Lands—Selling from $100 to $200 per acre; considerable changing hands.

Report of Fair—Held at Winfield, September 14, 15, 16, 17, 1909. Rainy and cold the first two days but fine weather and good attendance the last two days.

HOWARD.

J. E. DOOLITTLE, CRESCO, JANUARY 24, 1910.

General Condition of Crops and Season—A late spring with a drouth in July hindered the growth of crops somewhat.

Corn—The crop was not allowed to mature sufficiently and there is a large amount that is soft and spoiled in the crib. About one-fourth of the crop is still in the fields.

Oats—Very good quality but was injured in the shock by severe rains. The average yield per acre was 20 bushels.

Wheat—Not much raised in county but what was grown was of good quality and yielded twenty to twenty-five bushels per acre. There was more winter wheat sown in the fall of 1909 than ever before.

Rye—Good quality and quite an acreage sown. Yielded 19 to 24 bushels per acre.

Barley—A large acreage sown and harvested. Yielded from 15 to 40 bushels per acre. That which was stacked and threshed early was of good quality but the remainder was injured by severe rains.

Flax—The crop was not so good as in 1908 as it was harvested during a rainy season and was severely injured by growing in the bundles.

Buckwheat—Quite an amount sown as the spring was late and the quality was good. Yielded from 8 to 20 bushels per acre.

Millet—Not much sown; hay injured by rains.

Sorghum—Some raised for making molasses but not much for fodder. The season was not a good one for sorghum.

Timothy—A large acreage; mostly cut for hay but some threshed for seed.

Clover—Winter killed quite badly; all cut for hay and no seed saved.

Prairie Hay—Not a large quantity cut; mostly mixed with timothy and other clovers and used for pasture.

Other Grains and Grasses—Field peas do well here; the crops for the past ten years have yielded from 28 to 60 bushels per acre; the season of 1909 being the best of all.

Potatoes—A good crop of potatoes; no rot or blight this season.

Vegetables—All kinds did well; a large crop of sugar beets raised and shipped to Waverly, Iowa; average yield of sugar beets was 9 to 14 tons per acre and price $5.00 per ton.

Apples—None on account of the late frost killing the buds.

Other Fruits—Strawberries were a fair crop; raspberries were a light crop owing to dry weather; grapes were killed by late frost in the spring.

Cattle—On account of shortage of feed in the spring the cattle were thin and did not regain much flesh until after the drouth in July and the death of the flies in the fall. No feeding being done here this season.

Horses—Good quality and plenty of buyers at prices ranging from $75.00 to $225.00 each. Much attention given to the breeding of draft horses.

Swine—Raised in large numbers and consume nearly all the corn raised in this county. No disease.

Sheep—Farmers owning their lands nearly all have them and some renters are getting them. Breeding sheep are of good quality and sell at auction sales at $7.00 to $10.00 per head for ewes.

Poultry—Great many raised in this county and there is a regular shipping demand for them at remunerative prices.

Bees—Are much in evidence and usually are a paying proposition; the season of 1909 was not a honey season owing to the July drouth, however, they are wintering well.

Drainage—Several miles of tiling laid during the season of 1909 and a large amount will be laid the coming season but more will still be needed.

Other Industries—Creameries and cheese factories are progressing.

Lands—Frequently selling at prices from $65 to $125 per acre.

Report of Fair—No fair held.

HUMBOLDT.

John Cunningham, Humboldt, October 21, 1909.

General Condition of Crops and Season—Crops have been about an average. The season was very wet through May and June; the balance of the season was dry.

Corn—About an average crop but badly blown down.

Oats—A little under the average this year, ranging from fifteen to fifty bushels per acre; average about thirty bushels per acre.

Wheat—Winter wheat is not much sown in this locality but the yield this year was exceptionally good; several small pieces reported to yield twenty-five bushels per acre. Spring wheat also a good crop, averaging probably about sixteen bushels per acre.

Rye—Very little sown.

Barley—Very little sown.

Flax—Very little sown.

Buckwheat—Know of none in the county.

Millet—A fair crop of hay; very little sown this year.

Sorghum—An average crop; very little sown.

Timothy—A heavy crop of hay and put up in good shape. Very little cut for seed.

Clover—A good crop of hay put up in good shape. Know of none being cut for seed.

Prairie Hay—A heavy crop. Not much prarie hay left in this county.

Other Grains and Grasses—Alfalfa was a good crop and put up generally in good shape. Not extensively but quite profitably grown.

Potatoes—Early potatoes are a good crop; late potatoes rather light. A large per cent of the crop frosted in early October.

Vegetables—Rather a small crop generally, especially late vegetables. Some sugar beets raised this season under contract with the plant at Waverly; a fair crop reported.

Apples—A large crop of fall varieties but heavy winds blew them off badly. Winter varieties not so large a crop and not extensively grown.

Other Fruits—Strawberries, blackberries, raspberries and gooseberries an average crop. Nearly all currant bushes were killed by insects a few years ago.

Cattle—In good condition and prices high, especially for fresh cows.

Horses—In good condition and prices high. Farmers are raising as many colts as they can.

Swine—A small crop of pigs and generally in poor condition. No disease reported.

Sheep—Not extensively raised. In good condition and free from disease.

Poultry—Very light crop but in good condition.

Bees—Not extensively raised.

Drainage—Much interest taken in drainage. Work being crowded as fast as tile and help can be secured.

Other Industries—Cement and tile factories, pop factory, and poultry packing plant, all doing well. Arrangements almost complete for a tile spade factory.

Lands—Increasing rapidly in price. A great many sales being made for more than $100 per acre.

Report of Fair—Held at Humboldt September 14, 15, 16, 17, 1909. The opening day was rainy, consequently exhibits were light, especially in the stock departments. The attendance was below that of the last three years.

IDA.

DANIEL LYNN, IDA GROVE, 1909.

General Condition of Crops and Season—The condition of crops was not average. Early frost in October froze all apples on the trees and corn was also damaged about 15 per cent.

Corn—Will not average over 90 per cent compared with the 1908 crop on account of the early frost in October.

Oats—Quality good; no rust; yield about 25 bushels per acre.

Wheat—Not much wheat grown but quality good; average about 12 bushels per acre.

Barley—Very poor on account of rain and hot weather before it was ripe; average yield 17 bushels per acre.

Millet—Good crop; average 100 per cent; all raised for seed.

Timothy—Good; prices high, $10.00 per ton in stack and $12.00 delivered.

Clover—Good; average 100 per cent; clover hay worth about $12.00 per ton; no seed raised.

Potatoes—Good; price 60 cents per bushel.

Vegetables—Good.

Apples—Good but all apples that were on the trees on the 28th of October were killed by frost.

Other fruits—Grapes 100 per cent; currants above average; plums about 80 per cent.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Not many sheep raised but they are shipped in and fed. Only about 60 per cent fed this year compared with last year.

Poultry—Average 100 per cent in condition.

Bees—Average 89 per cent in condition.

Lands—Good and will sell for about $15.00 more per acre than they would a year ago.

IOWA.

ALEX MCLENNAN, MARENGO, OCTOBER 19, 1909.

General Condition of Crops and Season—The quality of crops in general fair. Had a late, wet spring, but a good warm, growing summer. Fall pastures and stock in good condition.

Corn—About eighty per cent of crop; good quality; more than average acreage planted but the wet spring reduced the acreage in low places.

Oats—Good quality; average about thirty-five bushels per acre; good harvesting weather; straw and grain look bright.

Wheat—More grown than of late years; average about thirty bushels and of good quality.

Rye—But very little grown; good yield and quality.

Barley—About the average acreage; fair quality.

Flax—None raised.

Buckwheat—Very little grown.

Millet—Very little grown.

Sorghum—Very little raised; good quality.

Timothy—Very heavy crop and of good quality.

Clover—Not much harvested except for hay; a heavy crop, good quality. Last spring's seeding exceptionally good.

Prairie Hay—None in the county.

Potatoes—Fair yield and good quality.

Vegetables—About the average amount raised; quality fair.

Apples—A short crop; thousands of bushels frozen on the trees by the heavy October frost.

Other Fruits—Plums and cherries not a good crop. Peaches not as good as last year. Number of trees increasing.

Cattle—Condition of herds improving; Aberdeen Angus, Short-Horns and Herefords predominate. Keen interest taken by breeders to improve the different breeds.

Horses—Only the very best are being raised here now; mostly heavy work horses and roadsters. Good demand and high prices.

Swine—Pig crop fair; all well bred. No cholera in the county and prices good.

Sheep—Not generally raised among the farmers. The Amana Society has several flocks of several thousand each.

Poultry—Increasing interest taken in poultry raising.

Bees—Very few stands in the county.

Drainage—Considerable wet and low land has been reclaimed in the past year, both by machinery and hand tiling. This work is increasing every year.

Other Industries—Woolen and flour mills report an average business. Canning factories, on the average, did not do well this year. Creameries have done an exceptionally good business. Brick and tile factories report good business.

Lands—Building improvements on the increase. More improved methods of cultivation and more attention given to fertilizing; the use of manure spreaders on the increase. More intensive farming practiced by the farmers. Lands range in price from $90 to $200 per acre.

Report of Fair—Held at Marengo, August 10, 11, 12, 1909. Weather was quite warm and attendance was not as large as usual on account of the harvesting and threshing. Exhibits of live stock and poultry larger than usual. Largest field of horses and the best races ever seen on the grounds.

IOWA.

J. P. BOWLING, VICTOR, SEPTEMBER 18, 1909.

General Condition of Crops and Season—Quality of crops in general is good. Considerable fall plowing being done. Fall pastures good and stock in good condition.

Corn—Good quality and mostly all out of danger of frost at this writing.

Oats—Good quality and fair yield.

Wheat—Very little sown in this county.

Rye—Very little grown; good yield and quality.

Barley—About the usual acreage; good quality.

Flax—None grown.

Buckwheat—Very little grown.

Millet—Very little grown.

Sorghum—Very little grown.

Timothy—Quality of hay and seed fine; large crop of seed raised here.

Clover—Quality of hay and seed fine; good crop of seed raised.

Prairie Hay—Not much in the county.

Other Grains and Grasses—Blue grass pasture of excellent growth.

Potatoes—Poor yield in quantity and quality.

Vegetables—About the average amount raised and quality good.

Apples—Light crop.

Other Fruits—Peaches and plums a complete failure, owing to early frosts.

Cattle—Larger number than usual at our fair. General condition good.

Horses—A good many sold at high prices.

Swine—Pig crop better than last year; all well bred; prices high.

Sheep—Very few raised in the county.

Poultry—Increased interest in poultry raising. Both poultry and eggs are brought to market in large quantities and bring big prices.

Bees—Very few stands in the county.

Drainage—Considerable tiling being done.

Lands—Prices range from $80 to $200 per acre, according to locality and improvements.

Report of Fair—Held at Victor, August 17, 18, 19, 1909. Weather fine and the fair fairly well patronized. Good showing of horses and cattle.

IOWA.

CHAS. FLETCHER, WILLIAMSBURG, OCTOBER 2, 1909.

General Condition of Crops and Season—Generally speaking the crops will average about the same as in former years. Climate conditions generally favorable, and September especially good for ripening and drying the corn. Farmers can husk corn early in October.

Corn—Fully an average yield; quality generally good where planted in proper season.

Oats—Excellent in quality and secured without injury from rain.

Wheat—Not raised to any extent in this county.

Rye—None raised.

Barley—None raised.

Flax—None raised.

Buckwheat—None raised.

Millet—Small acreage in this county. Quality excellent.

Sorghum—None raised.

Timothy—Above the average; especially good in production of seed.

Clover—Good crop.

Prairie Hay—Have seen none in this county for several years.

Potatoes—Rather below the average in yield, but of uniform and excellent quality.

Vegetables—Not raised as a crop; farmers generally raise enough for home use.

Apples—Not up to the average in yield.

Other Fruits—Somewhat affected by frost in the early spring, especially cherries and plums.

Cattle—Fine quality of cattle in the county; Aberdeen Angus, Herefords and Short-Horns predominate.

Horses—Much interest taken in horse breeding.

Swine—Industry has been developing for years; pure bred stock prevails.

Sheep—None to speak of.

Poultry—Much attention given to poultry raising. Our dealers handled poultry products to the amount of $88,000 last year.

Bees—None to speak of.

Other Industries—A creamery and a tomato canning factory are doing good business.

Lands—Prices high.

Report of Fair—Held at Williamsburg, September 14, 15, 16, 17, 1909. More than the usual interest manifested in the fair; exhibits were good, particularly the fruit display, which is always above the average at county fairs. The fair was considered a marked success and premiums paid will be in excess of any former year.

JACKSON.

B. D. ELY, MAQUOKETA, SEPTEMBER 21, 1909.

General Condition of Crops and Season—Good.

Corn—Good; the best for several years.

Oats—Good quality and fair yield.

Wheat—Small acreage but a good crop.

Rye—Very little raised.

Barley—Fair.

Flax—None raised.

Buckwheat—Small acreage but looks good.

Millet—Very little raised but fairly good crop.

Sorghum—Not much planted in this county.

Timothy—Quality and yield very good.

Clover—A little short on account of freezing out last winter.

Prairie Hay—Practically none.

Other Grains and Grass—Not many.

Potatoes—About half a crop.

Vegetables—Good.

Apples—A failure.

Other Fruits—Very good.

Cattle—Well stocked with the best grades.

Horses—Good quality in this county and high in price.

Swine—Not as many raised this year on account of high price of corn.

Sheep—Very few.

Poultry—A growing industry in this county. A larger and better exhibit at the fair than ever before.

Bees—Quite a number kept and a fair amount of honey shipped.

Drainage—Good natural drainage.

Other Industries—Burning lime is an important industry in this county.

Lands—Increasing in value every year.

Report of Fair—Held at Maquoketa, August 31, September 1, 2, 3, 1909. Not a financial success on account of rainy weather every day, but all premiums were paid in full and the racing program was carried through.

JASPER.

J. H. GRIBBEN, NEWTON, OCTOBER 1, 1909.

General Condition of Crops and Season—Unfavorable.

Corn—Generally good.

Oats—Medium.

Wheat—Good.

Timothy—Good.

Clover—Medium.

Prairie Hay—Good.

Potatoes—Medium.

Vegetables—Good.

Apples—Poor.

Other Fruits—Poor.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Nothing extra.

Drainage—None.

Other Industries—Good.

Lands—Advancing in price.

Report of Fair—Held at Newton, dates September 13, 14, 15, 16, 1909, but on account of unfavorable weather postponed until the 16th and 17th.

JEFFERSON.

JOHN HERON, LOCKRIDGE, JANUARY 21, 1910.

General Condition of Crops and Season—The season of 1909 in this section of the State was somewhat peculiar, in that it was cold and dry in the beginning; very hot summer months and frosts in October.

Corn—Corn crop was a very good prospect until the extremely dry weather of the latter part of July and August. Think the crop will average 25 bushels per acre.

Oats—Somewhat thin on the ground but extra good quality; probably averaging 30 bushels per acre.

Wheat—Extra heavy straw and the berry well filled; many fields yielding over 30 bushels per acre.

Rye—Good yield but acreage smaller than usual.

Barley—Acreage small and yield poor; thin on ground.

Flax—None raised in this vicinity.

Buckwheat—None raised.

Millet—Very small quantity sown.

Sorghum—None in commercial quantity.

Timothy—Hay crop lighter than usual; selling at present from ten to twelve dollars per ton.

Clover—Badly killed out; not much hay put up and not much seed threshed.

Prairie Hay—None.

Other Grains and Grasses—Pastures were good until fall when the dry weather came on.

Potatoes—Good crop; some froze by the October freeze.

Vegetables—A fair average.

Apples—Good crop but many were frozen before picked.

Other Fruits—No peaches; fair crop of cherries; blackberries, raspberries, and strawberries about as average.

Cattle—Have done well on pasture and have brought good prices.

Horses—A good many young horses are being raised and prices are high.

Swine—The high price of hogs and corn will shorten the crop for next season. A good many farmers have sold their hogs very light.

Sheep—Not many sheep kept in this vicinity but there seems to be a tendency toward increase.

Poultry—A good and increasing interest is taken in this department; poultry and eggs are both a very good price.

Bees—Not much being done in the improved method of handling bees.

Drainage—Not much being done in this line; some farmers are trying in a small way.

Lands—There has been a good many changes in ownership, generally at increased prices.

Report of Fair—No fair held in this county.

JOHNSON.

GEORGE A. HITCHCOCK, IOWA CITY, OCTOBER 23, 1909.

General Condition of Crops and Season—Wet and cold in the spring, down in August.

Oats—Fair yield and good quality.
retarding planting crops.

Corn—Very fine in some parts of the county in others badly blown

Wheat—Small acreage but good yield.

Rye—Small acreage but good quality.

Barley—Good yield.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Small acreage; poor yield.

Timothy—Heavy.

Clover—Winter killed.

Potatoes—Very poor yield because of hot, dry weather.

Vegetables—Good.

Apples—Very poor yield.

Other Fruits—Except small fruits, a very poor yield.

Cattle—About the usual supply and looking well.

Horses—Scarce and very high in price.

Swine—Not as many as usual on account of wet, cold spring.

Sheep—Not many grown in this county.

Poultry—Plentiful and high in price.

Bees—Not a good year for honey.

Drainage—A good deal of tile put in.

Lands—Very high; prices ranging from $100 to $150 per acre and quite a number have changed owners at these prices. Rents range from $5 to $6.25 per acre.

Report of Fair—Held at Iowa City, September 6, 7, 8, 9, 1909. Small attendance on account of rainy weather. A good exhibit of live stock and good races.

JONES.

FRED W. KOOP, MONTICELLO, OCTOBER 2, 1910.

General Condition of Crops and Season—Good; season early.

Corn—Big crop.

Oats—Good.

Wheat—No wheat raised.

Rye—Good.

Barley—Poor.

Flax—None raised.

Buckwheat—Fair.

Millet—Small acreage but good.

Sorghum—Good; small acreage.

Timothy—Extra good.

Clover—Good.

Prairie Hay—None.

Potatoes—Fair yield.

Vegetables—Good

Apples—Almost a failure.

Other fruits—Small fruits good.

Cattle—Good condition.

Horses—Good condition.

Swine—Plenty and in good condition.

Sheep—Very few raised.

Poultry—Plentiful.

Bees—Good condtion.

Drainage—Sloughs nearly all tiled.

Lands—About twenty-five per cent higher.

Report of fair—Held at Monticello, August 30, 31, September 1, 2, 3, 1909.

JONES.

L. W. RUSSELL, ANAMOSA, OCTOBER 15, 1909.

General Condition of Crops and Season—Fine; have not been better for years.

Corn—Large acreage; yield eighty to ninety bushels per acre; quality A No. 1.

Oats—Very good; bright and heavy.

Wheat—Very little raised.

Rye—Very little raised.

Barley—Very little raised.

Flax—Very little raised.

Buckwheat—Very little raised.

Millet—Very little raised.

Sorghum—Very little raised.

Timothy—Heavy crop; quality good.

Clover—Good.

Prairie Hay—None.

Potatoes—Very good.

Apples—Very few.

Cattle—Not many feeders in this section; farmers carry enough cattle to take care of the products of their farm. Improving in grade.

Horses—More horses than ever and better grade.

Swine—Large number; very little cholera.

Sheep—Increasing every year on the rougher land.

Poultry—Great interest in fancy poultry.

Bees—Very few.

Drainage—All wet land being drained and its quality and production being increased.

Lands—Increasing in value every year and quite a little changing hands.

Report of Fair—Held at Anamosa, August 24, 25, 26, 27, 28, 1909. Rain interfered with the attendance on two days. Horse and cattle display very fine. The amusement features were fine and the fair a success in every way except financially.

KEOKUK.

GEO. A. POFF, WHAT CHEER, OCTOBER 20, 1909.

General Condition of Crops and Season—About an average.

Corn—Yield from thirty to forty bushels per acre.

Oats—Excellent quality; yield from twenty-five to thirty bushels per acre.

Wheat—Very little raised, but excellent yield and fine quality.

Rye—Very little raised.

Barley—Very little raised.

Flax—Very little raised.

Buckwheat—Very little planted.

Millet—Small acreage; average crop.

Sorghum—Small acreage; average crop.

Timothy—Crop heavy and extra good.

Clover—Very scarce.

Prairie Hay—None.

Other Grains and Grasses—Hay crop heavy, about two to two and one-half tons per acre; selling at from $7.50 to $8 per ton.

Vegetables—Good crop.

Apples—Crop was very short.

Other Fruits—Heavy crop of strawberries and blackberries, and prices were low.

Cattle—Are in excellent condition. There are several large breeders in this county.

Horses—Have done well and are in demand at good prices.

Swine—A great many raised. A number of well bred herds in this vicinity.

Sheep—Not so many raised as in former years.

Poultry—A great deal raised; quite an active interest here.

Bees—Did not do so well this year as usual.

Drainage—A great amount of tiling being done all over the county.

Lands—Rapidly increasing in value; prices range from $75 to $125 per acre.

Report of Fair—Held at What Cheer, September 13, 14, 15, 16, 1909. Was a great success on the last two days, the paid admissions being larger than last year; rain interfered the first two days. All departments were well filled with excellent exhibits. The racing was good and other attractions above the average.

KOSSUTH.

W. E. MCDONALD, ALGONA, OCTOBER 28, 1909.

General Condition of Crops and Season—Corn fully matured and a bumper crop. Season favorable for farmers and nearly all fall work fifty per cent ahead of average years.

Corn—An excellent crop; will be better than average in last ten years.

Oats—Crop short in yield owing to late freeze in spring, but quality is very good.

Wheat—Very little sown, but will average a shade better than in former years.

Rye—Practically little sowed in this county.

Barley—Light yield, but good quality.

Flax—Considerable raised on low lands which were tiled; quality fine and yield good.

Buckwheat—None.

Millet—Excellent crops raised, principally on lands too wet to cultivate to corn in the early part of the season.

Sorghum—None.

Timothy—Good; extra acreage this year owing to continued wet seasons.

Clover—Sowed principally with timothy and the yield has been good.

Prairie Hay—Very heavy, but quality poor owing to great growth. All cut and in stack early assuring good quality for feeding purposes.

Potatoes—Extra acreage and yield abundant.

Vegetables—Good; quality fine.

Apples—Yield small owing to late spring freeze and heavy rains.

Other Fruits—Good yield and quality fine.

Cattle—In good condition; grade being constantly improved and herds are increasing in numbers.

Horses—Excellent quality and good grades.

Swine—Practically free from disease and numbers increasing.

Sheep—Quality good; free from all diseases.

Poultry—Good.

Bees—Quite a number of farmers keep bees and have honey for sale.

Drainage—County is being drained systematically and will soon be tiled. Much interest in drainage.

Lands—Values steadily advancing and sales steady.

Report of Fair—Held at Algona, September 14, 15, 16, 17, 1909. A fine fair; good attendance and all premiums paid in cash.

LEE.

CHRIS HAFFNER, DONNELSON, OCTOBER 6, 1909.

General Condition of Crops and Season—Fair.

Corn—Will average better than last season.

Oats—Quality good; better crop than for several years past.

Wheat—Good; average from twenty to thirty bushels.

Rye—Not much raised.

Barley—None raised.

Flax—None raised.

Buckwheat—None raised.

Millet—None.

Sorghum—Fair to good.

Timothy—Good crop.

Clover—Rather light crop.

Prairie Hay—None.

Potatoes—Quality good; yield light.

Vegetables—Fair.

Apples—Light crop and rather poor quality.

Other Fruits—Not very good.

Cattle—Short-Horns and Polled Angus predominate.

Horses—Quite an interest in horse breeding; Percherons predominate.

Swine—Duroc Jersey and Poland China breeds predominate.

Sheep—Shropshire and Delains predominate.

Poultry—Great interest taken in poultry; all leading breeds raised.

Bees—Very few kept.

Drainage—Quite a good deal of tiling done.

Lands—Range in price $100 to $150 per acre.

Report of Fair—Held at Donnelson, September 8, 9, 10, 1909. Attendance very good considering the unfavorable weather. Exhibits good in all departments except the cattle department, which was light. Races were well filled and good. All premiums were paid in full. Receipts about equal expenditures.

LEE.

JOHN WALLJASPER, WEST POINT, OCTOBER 14, 1909.

General Condition of Crops and Season—Season was wet and late in spring, also rainy in June up to July. Owing to continued drouth from July, corn suffered considerably.

Corn—Quality good; two-thirds of a crop; all matured.

Oats—Good crop; quality firm and heavy.

Wheat—This country seems to be running back to wheat; quality good; yield from fifteen to thirty-five bushels per acre.

Rye—Small acreage; quality good.

Barley—Very little sown.

Flax—None.

Buckwheat—Small acreage; seems to be doing well.

Millet—Very little sown.

Sorghum—Good quality and good yield.

Timothy—Very heavy yield; quality fine.

Clover—Good yield and good quality.

Prairie Hay—None.

Other Grains and Grasses—Blue grass does well.

Potatoes—Early potatoes a good yield and good quality; late plantings damaged by drouth.

Vegetables—Did well.

Apples—A medium yield and fair quality.

Other Fruits—Cherries did well; plums and peaches a small crop; berries a fair crop; pears are blighting.

Cattle—A scarcity of stock cattle and feeders in this vicinity. Farmers who are devoting attention to the cattle business are doing well.

Horses—Command a big price and are eagerly sought. Farmers are devoting more attention to the horse business than in former years.

Swine—Not so plentiful as when corn was cheaper. More attention is being paid to this industry; Poland China, Duroc Jersey and Chester White being the leading breeds.

Sheep—Owing to the high price of wool and mutton farmers are beginning to devote considerable attention to sheep. Shropshires predominate.

Poultry—Continued high prices of eggs and poultry has caused a boom in poultry raising; beginning to be considered as one of the money making industries on the farm.

Bees—Not much attention devoted to this industry.

Drainage—All flat table lands are being drained, thus greatly increasing their value.

Other Industries—Lumber, woolen and grist mills, foundries, canning factories, railroad shops and smaller manufacturies are dotted over this district in the different cities and towns.

Lands—Land is on the boom, selling as high as $150 to $200 per acre.

Report of Fair—Held at West Point August 24, 25, 26, 1909. Successful in every respect so far as exhibits were concerned; stock exhibits and races were good.

LINN.

E. E. HENDERSON, CENTRAL CITY, SEPTEMBER 28, 1909.

General Condition of Crops and Season—Good.

Corn—General condition good; well eared and well matured. Considerable blown down by late rain and wind.

Oats—Good quality; average yield about thirty-eight bushels.

Wheat—Small acreage; about twenty bushels per acre.

Rye—Very little grown this season.

Barley—Fair crop.

Flax—None raised.

Buckwheat—Small acreage; fair crop.

Timothy—Average yield.

Clover—Good quality and a fine second crop.

Prairie Hay—Fair; very little grown.

Potatoes—Hardly an average yield; not enough grown for home consumption.

Apples—A very poor crop.

Other Fruits—Scarce.

Cattle—Good condition; pastures good. Dairy cows in great demand; good feeding stuff scarce; very few on feed.

Horses—Good ones scarce and in excellent demand. Prices average about the same as a year ago.

Swine—Not as large number raised as usual; no disease reported.

Sheep—A good many raised and in good condition.

Lands—High, selling from $70 to $125 per acre. A good many farms selling this season.

Report of Fair—Held at Central City, September 7, 8, 9, 10, 1909. An excellent exhibition and good attendance, notwithstanding bad weather on two days. A sucess financially and in pleasing the people.

LINN.

C. J. KNICKERBOCKER, FAIRFAX, OCTOBER 23, 1909.

General Condition of Crops and Season—Condition of crops not as good as hoped for, owing to late spring, especially the corn crop which experienced late planting and in many cases cut worms causing replanting, and finally the drouth through August. Conditions seemed more favorable to the oats crop, which outclassed that of last year both in quality and quantity.

Corn—Average yield about thirty-eight bushels per acre.

Oats—Good quality, averaging about forty bushels per acre.

Wheat—Small acreage; yield a lower average than last year.

Rye—Fair quality; average yield.

Barley—Very little raised.

Timothy—Good quality but less plentiful than in former years.

Clover—Good crop.

Potatoes—Early planting yielded well, but late varieties fell far below the average.

Apples—Very few.

Other Fruits—Cherries and plums ranged from poor to medium in production.

Cattle—Scarce.

Horses—Draft breeds predominate.

Swine—Farmers are not feeding to a great extent.

Lands—Selling at $125 to $250 per acre.

Report of Fair—No fair held at Fairfax this year.

LINN.

J. B. LEWIS, MARION, OCTOBER 25, 1909.

General Condition of Crops and Season—Best in several years.

Corn—Good; forty to sixty-five bushels per acre.

Oats—Good; forty to fifty bushels per acre.

Wheat—Small acreage; yield averaged about twenty-five bushels per acre.

Rye—Not much raised; crop good.

Barley—Not much raised; crop good.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—Good crop; small acreage.

Timothy—Good crop; best in several years.

Clover—Good crop best in several years.

Prairie Hay—Not much raised.

Potatoes—Crop fair; affected by dry weather late in season.

Vegetables—Good crop of all kinds.

Apples—Very few raised; crop not up to the average.

Other Fruits—Good crop.

Cattle—Scarce and high priced.

Horses—Scarce.

Swine—About the usual number.

Sheep—Not many raised.

Poultry—About the usual number.

Bees—Not many.

Drainage—Few farms untiled, as land is so high farmers cannot afford to allow land to lie idle in sloughs.

Lands—Constantly increasing in price; worth from $90 to $150 per acree.

Report of Fair—Held at Marion, September 14, 15, 16, 17, 1909. Acknowledged to be the best ever held by the association. Was a success financially and otherwise.

LOUISA.

N. T. HENDRIX, COLUMBUS JUNCTION, SEPTEMBER 15, 1909.

General Condition of Crops and Season—Season late on account of excessive rains early and corn damaged by drouth in August. Hay and small grain above the average. Pastures in fine condition at present. Plowing for fall seeding of wheat and rye now in progress; acreage will be large.

Corn—The best corn land damaged ten per cent on account of drouth, poor and medium land damaged ten to thirty per cent; acreage large, twenty-five per cent planted late.

Oats—Quality good; yield better than past few years, average thirty-two bushels. Early variety better than late.

Wheat—Quality of fall wheat good and yield better than for several years; also increase in acreage. Spring wheat only fair in quality and yield; small acreage.

Rye—Normal crop; quality good and average yield. Perhaps smaller acreage on account of increased acreage in wheat.

Barley—Small acreage; quality and yield good.

Rye—None.

Buckwheat—Acreage small; outlook good for quantity and quality.

Millet—But little grown this year.

Sorghum—Acreage about normal; good outlook for fair crop.

Timothy—Fine crop and harvested in fine condition.

Clover—Good; harvested in good condition. More acreage on account of fertilizing the land. Spring seeding damaged by prolonged drouth in August.

Prairie Hay—Quality good; acreage growing smaller from year to year.

Potatoes—Early crop fairly good; late crop poor on account of drouth. Outlook fair for sweet potatoes.

Vegetables—Early vegetables good, later ones injured by drouth. Melon crop injured by drouth but sold at high prices.

Apples—Poor crop; almost an entire failure.

Other Fruits—Generally good, but no peaches or pears.

Cattle—Shortage of pasture on account of increased acreage in corn reduces the number of cattle raised; quality good. Large numbers of western and northern cattle fed during fall and winter.

Horses—Interest in well bred roadsters and draft horses increasing; quality better each year. Some complaint of dearth of well bred stallions. Good demand from outside buyers at high prices.

Swine—In healthy condition; steady increase in numbers raised; breeding improving from year to year; Poland China, Duroc Jersey and Chester White predominate.

Sheep—About as usual; possibly an increase. Exhibit at fair about normal.

Poultry—Poultry industry has been large for several years; quality of birds improving each year.

Bees—Interest declining; crop of honey not up to standard.

Drainage—Dealers in drain tile report large sales. Large amount of ditches being dug, and levee work along the river bottoms.

Lands—Steady increase in values. Land sales in advance of last years, which were also large.

Report of Fair—Held at Columbus Junction, September 8, 9, 10, 11, 1909, being carried over one day on account of rain. Generally speaking the fair was a success and showed increased interest on part of the people. Stock exhibit was fair; other exhibits about average. Prospects are good for a more successful fair in the future and efforts will be made to secure more exhibits in the live stock departments.

LUCAS.

JAMES L. WASHBURN, LUCAS, DECEMBER 21, 1909.

General Condition of Crops and Season—The season was erratic in the extreme; very wet in both spring and autumn with severe early freeze injuring corn and apples.

Corn—Early planting suffered badly by heavy rains; late planting hurt by excessive rains and all injured by early freezing. Feeding values compared with 1908 about 33 per cent and about 10 per cent still in the fields.

Oats—Ninety per cent were sown early and disced in but very few were harrowed. This was followed by wet, freezing weather, making early prospects very poor, but final results fairly good.

Wheat—Fairly good; larger acreage sown this fall. The farmers should drill their wheat and small grain to obtain good results.

Rye—Very small acreage raised; average yield 15½ bushels per acre.

Barley—None grown to speak of.

Flax—Used to grow it as an initial crop on prairie sod but no longer used in our rotation.

Buckwheat—Slight acreage with fair yield; sown mostly where the corn was drowned out.

Millet—Small acreage where corn was drowned out. Grown only for cattle feed and none threshed except for seed.

Timothy—Seventy-five per cent of the usual crop. Too wet on level land.

Prairie Hay—A thing of the past in this section of Iowa.

Potatoes—Never was so nearly a failure; wet soppy condition of ground drowned them out. No late planting done and potatoes were shipped in by car loads to supply home demands.

Apples—Superabundance of early varieties; no market; fair yieled of late varieties but 75 per cent of them were caught on trees by an early freeze. However, they are keeping remarkably well.

Cattle—All leading breeds found here; general herds are being rapidly improved; Angus and Galloways gaining rapidly. Wet spring and fall caused grass to be rather poor.

Horses—Condition good. Percherons, Clydesdales and Belgiums predominate and many of these are imported. Fast horses are only read about, not seen anymore. Only about 75 per cent of usual foals this year.

Swine—All the leading breeds are found in this county. Farmers are losing faith in the results of feeding high priced corn to stock. 1910 will yield only 33 per cent of the usual crop of hogs.

Poultry—Wet weather was very hard on the early hatches. Very few bugs and no grass hoppers for chickens.

Bees—Condition only fair; lack of clover blossoms.

Drainage—Very little tiling being done about us. Fear is entertained that our clay sub-soil will not admit of its success. People are leaning to surface drain more properly.

Other Industries—Coal mining has declined owing to controversy of ownership and litigation of miners. Much good territory is undeveloped owing to lack of railroad facilities in the northeastern part of our county.

Lands—Much of our territory lays in the timothy seed belt but that article no longer pays; long hay will hereafter predominate. Inasmuch as our lands lie in and are a part of the drift with clay sub-soil we were especially injured by the extremely wet spring.

Report of Fair—No county fair held any longer. We are near the great Iowa Exposition, which eclipses the world.

LYON.

GEORGE H. WATSON, ROCK RAPIDS, OCTOBER 23, 1909.

General Condition of Crops and Season—Season has been very favorable; few severe storms during the crop season and no hail. Three severe wind storms uncovered considerable of the small grain just after it has been sown.

Corn—Compared with last year is about a ninety-eight per cent crop, but with an acreage of ten per cent more than in 1908. Quality good.

Oats—At least fifty per cent better than last year; yield averages twenty-five to thirty bushels and tests thirty to forty-five pounds to the bushel.

Wheat—Acreage very small; yield and quality good.

Rye—None raised.

Barley—About fifty per cent yield as compared with last year; quality poor; average about sixteen bushels per acre.

Flax—Not grown in this county.

Buckwheat—None raised. .

Millet—Average quality and yield; acreage less than heretofore.

Sorghum—Small acreage; yield is good and stalks strong and large.

Timothy—Fully an average crop and yield. Acreage about as in former years.

Clover—Hay crop good; none threshed yet for seed.

Prairie Hay—Lands in this county are too valuable to admit of leaving them uncultivated for the purpose of using the hay growth thereon.

Other Grains and Grasses—The foregoing covers about all the grains and grasses grown in this county.

Potatoes—Yield about eighty-five per cent of last year's crop; quality good.

Vegetables—About fifty per cent of last year's crop. Cabbage very light and unsound; onions good quality and fair yield; beets small yield but good quality.

Apples—Very few orchards in the county. Yield fully an average of past years.

Other Fruits—An average yield.

Cattle—Not as many fed as in past years, but all the farmers have a few. The quality of feed is good and farmers are raising a good grade of stock.

Swine—Crop better than last year. No disease reported.

Sheep—A number of farmers are buying breeding ewes and those who have been in the business several years report good increase. Very few shipped in for feeding.

Poultry—Considerable attention given to poultry, increasing the number and quality. One squab farm with about seven thousand squabs on hand.

Bees—Few kept. This season has not been favorable for honey-making.

Drainage—Thousands of tile have been laid the past year.

Other Industries—Concrete blocks and machines for making same manufactured here. Also have a creamery. A cement tile and curb manufacturing plant in process of organization.

Lands—Increasing in value and productiveness. Considerable farm building being done. Farms being cut up into smaller farms each year.

Report of Fair—Held at Rock Rapids, August 31, September 1, 2, 3, 1909. Rain interefered greatly with the atteendance but receipts were sufficient to meet expenses.

MADISON.

W. E. GRISMER, WINTERSET, NOVEMBER 3, 1909.

General Condition of Crops and Season—Crops not as good as average. Season too wet in planting time and too dry in growing time.

Corn—Eighty per cent.

Oats—Ninety per cent.

Wheat—Ninety per cent.

Rye—Eighty per cent.

Barley—Ninety per cent.

Flax—None.

Buckwheat—None.

Millet—Seventy-five per cent.

Sorghum—Eighty per cent.

Timothy—One hundred per cent.

Clover—One hundred per cent.

Prairie Hay—None.

Potatoes—Ninety per cent.

Vegetables—One hundred per cent.

Apples—Ninety per cent.

Other Fruits—One hundred per cent.

Cattle—One hundred per cent.

Horses—Ninety per cent.

Swine—Ninety per cent.

Sheep—One hundred per cent.

Poultry—One hundred per cent.

Bees—One hundred per cent.

Drainage—One hundred per cent more than ever before in this county.

Other Industries—One hundred per cent.

Lands—Not as many farms changed as in 1908.

Report of Fair—Held at Winterest, September 14, 15, 16, 1909.

MAHASKA.

C. F. MOMYER, NEW SHARON, SEPTEMBER 24, 1909.

General Condition of Crops and Season—Only fair; wet.

Corn—Fair; probaly two-thirds of a crop.

Oats—Good quality; medium yield.

Wheat—Splendid.

Rye—Very little sown; good quality.

Barley—Very good; small acreage.

Flax—None.

Buckwheat—Small amount sown; good.

Millet—None.

Sorghum—Good.

Timothy—Hay heavy; good crop of seed.

Clover—Very poor seed crop.

Prairie Hay—None.

Other Grains and Grasses—None.

Potatoes—Early potatoes good; late potatoes scarce.

Vegetables—Very good

Apples—Poor quality and light crop.

Other Fruits—Good.

Cattle—Feeders scarce and high.

Horses—Prices high.

Swine—Prices high.

Sheep—Fair crop of sheep.

Poultry—Good.

Bees—Very few; honey scarce.

Drainage—More tiling being done than ever before.

Lands—Booming; price from $100 to $175 per acre.

Report of Fair—Held at New Sharon, September 14, 15, 16, 17, 1909. All departments were full and exhibits were of good quality. Rain interefered with the attendance the second day. Free attractions were good.

MARION.

J. P. KLEIN, PELLA, OCTOBER 19, 1909.

General Condition of Crops and Season—Crops fair; season backward and wet in the spring, dry and hot the latter part of the season.

Corn—Average crop; increase in acreage.

Oats—Average crop; quality good.

Wheat—Small acreage. Quality of spring wheat fair; winter wheat good.

Rye—Fair crop.

Barley—Fair.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—Good crop.

Timothy—Average crop.

Clover—Average.

Prairie Hay—None.

Potatoes—Poor crop.

Vegetables—Fair crop.

Apples—Light crop.

Other Fruits—Light crop.

Cattle—Below the average.

Horses—Average.

Swine—Light amount on hand.

Sheep—Average.

Poultry—Average.

Bees—Average.

Drainage—Good.

Other Industries—Good.

Lands—Increase in value about twenty per cent the last year.

Report of Fair—Held at Pella, September 28, 29, 30, October 1, 1909. Good attendance. Art hall and poultry exhibits good; other exhibits fair.

MARSHALL.

H. M. WEEKS, RHODES, OCTOBER 12, 1909.

General Condition of Crops and Season—Wet weather in the spring retarded planting and cultivation, and considerable damage was done by the drouth in August and September. The fall has been generally favorable with the result that crops are fairly good and of fine quality.

Corn—Large acreage. Considerable damage on low land, but on good land the yield is good and of good quality. Many fields will be ready to crop by October 15th. Crop above the average for five years.

Oats—Yield from twenty to thirty-five bushels per acre. Grain fine and heavy and straw of good quality, free from rust. Crop harvested in good condition.

Wheat—Very little spring wheat raised; crop of winter wheat fair and of good quality; yield twenty to thirty bushels per acre.

Rye—But little raised.

Barley—Small acreage; yield light; quality fair.

Flax—None.

Buckwheat—None raised to speak of.

Millet—Some raised for fodder on land too wet for other crops.

Sorghum—None to report.

Timothy—A fine crop and well secured. Yield from one and one-half to two and one-half tons per acre and of fine quality. Fall rains have caused good second growth.

Clover—Considerable of the land seeded in 1908 was winter killed but the crop was generally fair. Second crop light but free from weeds and of fine quality.

Prairie Hay—None left in this county. No wild hay except in sloughs.

Other Grains and Grasses—A few are experimenting with alfalfa.

Potatoes—Average yield and of fine quality. Worth in this section of the county seventy-five cents per bushel. A better crop in the north and east part of the county.

Vegetables—A good yield of all garden vegetables and of superior size and quality.

Apples—Rather a light crop. Home grown winter apples one dollar a bushel; about enough for home consumption.

Other Fruits—Strawberries and grapes fine; other small fruits a light yield. Few plums; fair crop of pears; no peaches.

Cattle—Pastures good and stock in fine condition. Farmers are getting herds well graded and inferior cattle are rapidly disappearing in this section; Short-Horns are the favorite breed.

Horses—Farmers are breeding with care and stock is being rapidly improved. Heavy draft horses are most extensively raised and many carloads are shipped annually.

Swine—Extremely high prices have caused much attention to be paid to this industry. A fine lot of pigs raised this season and the showing at the county and district fairs was fine.

Sheep—Not extensively kept in this county; many farmers have small flocks of well bred sheep. Have been very free from disease and have done well.

Poultry—High prices of eggs and poultry have caused much attention to be paid to this industry.

Bees—But few kept in this section; small yield of honey.

Drainage—Marshall and Story counties are very well tiled. Some county work between the two counties now in progress will materially improve several hundred acres of land.

Other Industries—Canning factories, creameries and tile works. Several plants for cement work have been established at different points in the county. The farmers' co-operative creameries have done a fine business.

Lands—Rapidly advancing in value. Few farms in this section at less than $100 per acre, and many as high as $175. Farms sold seven years ago for $50 or $60 have been sold this season for $150 per acre. Some movement toward northern and western lands, but not as much as in 1907 and 1908. Cash rent of lands from $4.00 to $6.00 per acre.

Report of Fair—Held at Rhodes, September 28, 29, 30, 1909. Purely an agricultural exhibit; no race track. The showing of horses, cattle and hogs was fine. The weather was fine, attendance good, and the fair generally satisfactory.

MARSHALL.

W. M. CLARK, MARSHALLTOWN, OCTOBER 9, 1909.

General Condition of Crops and Season—Not up to the average; too much rain in the early part of the season.

Corn—A poor stand on low land, with some parts a total failure; not over eighty per cent of usual crop.

Oats—Not up to the average, occasioned by wet weather in the spring.

Wheat—Winter wheat fine, yielding thirty to thirty-five bushels per acre; spring wheat suffered from unfavorable season.

Rye—None raised.

Barley—Small acreage; fairly good.

Flax—None raised.

Buckwheat—Small acreage; average crop.

Millet—Small acreage but good.

Sorghum—Not enough raised to report.

Timothy—Large crop and good quality.

Clover—Heavy crop but lodged to some extent; second crop light.

Prairie Hay—None.

Other Grains and Grasses—A few acres of alfalfa proved a succeses both in quality and quantity of crop; can be raised successfully here.

Potatoes—Small crop and not as good quality as usual.

Vegetables—Good.

Apples—Very light crop.

Other Fruits—Grapes fine; plums and peaches a failure.

Cattle—In fine condition; pastures have been good all season.

Horses—More horses being raised. More farmers are looking for pure bred stock in all classes or breeding. Tendency toward driving horses is increasing.

Swine—Not as many in the county as usual, but the display at our fair was better in quality than ever before.

Sheep—The number of good sheep is on the increase.

Poultry—This county is fully up to other counties in the poultry business. Much poultry raised; most of them fine stock.

Bees—But few kept. Season unfavorable for honey crop.

Drainage—Some work being done in the western portion of the county. Local drains put in a few years ago have beeen very beneficial.

Lands—Price of farm lands increasing. Good farms command $140 to $175 per acre, with a goodly number of sales.

Report of Fair—Held at Marshalltown, September 6. 7. 8. 9, 10, 1909. A good display in all departments and about $2,300 paid in premiums outside of speed. Improvements were added during the season and will close the year with a good balance in the treasury.

MILLS.

I. J. SWAIN, MALVERN, OCTOBER 20, 1909.

General Condition of Crops and Season—Notwithstanding the season was about three weeks late the general crop conditions are above the average. Excessive rainfall soon after planting seriously retarded cultivation and has resulted in an unusually weedy aspect.

Corn—Good stand secured by all who tested their seed; others not so fortunate. Splendid growth; development slightly checked by drouth but yield will be a little above the average.

Oats—Ideal conditions throughout the season and yield considerably above normal.

Wheat—Excellent crop; harvested in fine condition; yield from eight to fifteeen bushels for spring wheat and twenty to thirty bushels for fall wheat.

Rye—Very little grown; good crop.

Barley—Good yield but very little grown.

Flax—None grown.

Buckwheat—None grown.

Millet—Very little grown.

Sorghum—None.

Timothy—Above the avereage; saved in good condition.

Clover—Good yield, but somewhat damaged by a week of wet weather at harvest time.

Prairie Hay—Average yield or better; fine quality.

Potatoes—Above the average in yield and quality.

Vegetables—Average yield and quality.

Apples—Very light crop, but quality superior.

Other Fruits—Quite satisfactory in most instances.

Cattle—Abundant pasturage; cattle in good condition and of superior quality.

Horses—Rapidly advancing in numbers and quality. No disease of any kind.

Swine—Good herds of good quality. Possibly not quite so many raised as in former years, but free from disease.

Sheep—Not a very prominent industry here but on the increase.

Poultry—Receiving increased attention and appears to be a very profitable industry.

Bees—Few kept.

Drainage—Great sums of money are being invested in draining the lowlands. Many hundreds of acres will have been reclaimed for the plow by another season.

Lands—Rapidly advancing in price. Values from $100 to $250 per acre and such activity in trade. Nothing with improvements can be bought under $100.

Report of Fair—Held at Malvern, August 3, 4, 5, 6, 1909. The most successful and satisfactory in our history. Weather ideal throughout. Attendance good and racing excellent.

MITCHELL.

D. F. SHEEHAN, OSAGE, 1910.

General Condition of Crops and Season—A very late, backward spring retarded the early growth of all crops but the season was made longer than usual by a late fall, making the general average of crops very good.

Corn—Acreage the same as usual; crop good.

Oats—Quality excellent; best crop we have had in years.

Wheat—None raised.

Rye—Very little raised but the crop was good.

Barley—Below our usual standard.

Flax—Good; not much raised.

Buckwheat—Very little raised.

Millet—Quality good.

Sorghum—None.

Timothy—Good crop; considerable seed.

Clover—Heavy yield; all hay.

Prairie Hay—Very littlee.

Other Grains and Grasses—All crops were good.

Potatoes—Best yield in years.

Vegetables—Good.

Apples—Good apple year.

Other Fruits—Small fruits above the average.

Cattle—In good condition; quality gets better every year; Short-Horns in the lead.

Horses—Better horses all the time; prices going higher.

Swine—Most profitable thing on the farm; no disease.

Sheep—More sheep than ever.

Poultry—A very good quality.

Bees—Not very many.

Drainage—Land is being tiled very rapidly.

Lands—Value in land has increased 20 per cent; prices range from $80 to $150.

Report of Fair—None.

MONONA.

A. W. BURGESS, ONAWA, SEPTEMBER 22, 1909.

General Condition of Crops and Season—Generally not good. Worst season for farmers in the history of the county.

Corn—Smaller acreage; yield averages twenty-five to thirty bushels per acre.

Oats—Small acreage; yield twenty-five to forty bushels per acre.

Wheat—Winter wheat, large acreage; yield fifteen to twenty bushels per acre. Spring wheat, small acreage; yield seven to ten bushels per acre.

Rye—None.

Barley—None.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—Large acreage; good.

Clover—Large acreage; good.

Prairie Hay—Poor crop.

Other Grains and Grasses—Alfalfa good.

Potatoes—Smaller acreage; generally poor yield.

Vegetables—Poor.

Apples—Good; big yield and good quality.

Other Fruits—Good; big yield.

Cattle—Fewer than usual.

Horses—Grade improving.

Swine—About the same; no cholera.

Sheep—None to speak of.

Poultry—Average.

Bees—About the same.

Drainage—Ditches going in every where in this part of the county.

Lands—Moving in fairly good shape and prices good.

Report of Fair—Held at Onawa, September 14, 15, 16, 17, 1909. Attendance as good as usual.

MONROE.

J. T. PORTER, ALBIA, OCTOBER 25, 1909.

General Condition of Crops and Season—Not up to normal in this section; cold and wet in spring.

Corn—Average crop; quality good.

Oats—Below the average in quality and quantity.

Wheat—Good quality; fifty per cent more acreage.

Rye—None sown.

Barley—None to speak of.

Flax—None.

Buckwheat—Very little sown; fair quality.

Millet—Small acreage.

Sorghum—Very little.

Timothy—Good crop and good quality.

Clover—Small crop; none cut for seed.

Prairie Hay—None.

Potatoes—Very light; twenty-five per cent of crop.

Vegetables—Good.

Apples—Large crop. Big per cent frozen.

Other Fruits—Fair.

Cattle—Good feeders sold as high as six cents; light cattle about normal; heavy cattle fifty per cent short this year.

Horses—Breeding of all classes strong. Prices highest ever known.

Swine—Scarce and high priced; some being shipped in for our packing house.

Sheep—Great interest taken in breeding.

Poultry—Prices high. Not enough poultry raised to supply the demand.

Bees—Not many kept.

Drainage—Very little tiling in the county.

Other Industries—Packing house, telephone factory and five cigar factories. Also we produce more coal than any county in the state.

Lands—Big increase in value of land; selling from $65 to $150 per acre.

Report of Fair—Held at Albia, September 28, 29, 30, and October 1st, 1909, the first in twenty years. The fair was a success financially and otherwise.

MONTGOMERY.

F. R. IDDINGS, RED OAK, 1909.

General Condition of Crops and Season—Lots of corn still unhusked, which is not in very good condition. Other grains in good condition.

Corn—The planting as a general thing was in in good time but severe rains washed the grounds badly and the yield was not very good; averaging about 30 bushels per acre.

Oats—Was of much better quality than in 1908; averaging about 25 bushels per acre.

Wheat—Winter wheat was a good crop, both in quality and quantity yielding from 20 to 40 bushels per acre. Spring wheat was not so good; averaging from 10 to 20 bushels per acre.

Rye—Very little raised but the quality was good and yielded about twenty bushels per acre.

Barley—Acreage increasing; quality good; yield from 30 to 45 bushels per acre.

Flax—Do not know that there is any raised here.

Buckwheat—Not worth mentioning.

Millet—Takes the place of other crops that have failed to produce. Considerable low land that could not be planted to corn was sown to millet and it yielded well.

Sorghum—What little there was planted did nicely as the fall was late and favorable.

Timothy—Very good and was put up in good shape; very little cut for seed but what was cut yielded very well.

Clover—Made a good growth but there never was such a small amount put up, which was owing to the continued wet weather; none cut for seed.

Prairie Hay—A very scarce article.

Other Grains and Grasses—None other than has been mentioned.

Potatoes—Was a good crop; acreage larger than common but the yield of early potatoes was much larger than late ones; price 75 cents per bushel at the time they were dug.

Vegetables—Yield not large but the quality good.

Apples—A very large yield of all varieties; price at the time they were gathered was very low.

Other Fruits—Peaches were a total failure; cherries good; plums not so good while other small fruits were a fair crop.

Cattle—Not very many being fed; stock cattle are very thin in flesh owing to the severe cold weather and people holding back on feed for fear of a shortage. Steers are very scarce and high.

Horses—In good demand; selling at sales from five to six hundred dollars a span; quite an increase in breeding and horses in general are in good condition.

Swine—Very small crop of pigs raised as the price is so high that they are sold as fast as they are in condition; quite a few fall pigs raised.

Sheep—Not many raised in this section.

Poultry—The wet and cold spring made very unfavorable conditions for the raising of poultry and the prices are higher than they have been for years. Eggs are also a good price. Poultry raising is a coming industry.

Bees—The yield of honey was good and the bees are wintering well.

Drainage—Very little done. However, it is a paying investment and there is a great deal of talk about having it done.

Other Industries—Farming is the principal industry in this section.

Lands—Selling higher every year. Lots of land selling from $100 to $200 per acre and some small farms of ten and twenty acres close to Red Oak sold recently from $300 to $500 per acre.

Report of Fair—None held.

MUSCATINE.

W. H. SHIPMAN, WEST LIBERTY, OCTOBER 27, 1909.

General Condition of Crops and Season—Early part of the season was backward and wet. Good weather for hay harvest.

Corn—Badly blown down by the wind the last week in August; up to that time crop was in good condition.

Oats—Fair yield and quality. Light in weight.

Wheat—Very little raised. Fall wheat good.

Rye—Fair crop; good quality.

Barley—Yield light but quality very good.

Flax—None raised.

Buckwheat—None raised.

Millet—Little raised. Very good quality.

Sorghum—Very little in this vicinity.

Timothy—Good yield; weather ideal for harvest.

Clover—Good crop, and saved in good condition.

Prairie Hay—None.

Potatoes—Light crop; fair quality.

Apples—Short crop.

Other Fruits—Small fruits a light crop; grapes a good crop.

Cattle—On pastures have done well. Very few being grain fed.

Horses—A good price and sold out very close. Good demand for all kinds, especially heavy horses.

Swine—Crop a little short. No disease. Prices high.

Sheep—On the increase; more being fed than usual.

Poultry—Supply good; prices high, both for poultry and eggs.

Bees—Not much attention paid to bees, and not as much honey as usual.

Drainage—More attention being paid to drainage than ever before; much tiling, also open ditches.

Other Industries—Good demand for milk and cream, and parties selling well satisfied.

Lands—The only way a man can keep from selling his land is not to price it.

Report of Fair—Held at West Liberty, August 23, 24, 25, 26, 1909. Heavy rains interfered with the progam; one day's races declared off. Cattle classes were well filled. Horse show good in roadster class; light in draft classes. Swine and sheep exhibits were up to the average, and the poultry show was fine. The fair was a financial success.

MUSCATINE.

H. WILDASIN, WILTON JUNCTION, OCTOBER 10, 1909.

General Condition of Crops and Season—Crops considerable below what they have been the last few years.

Corn—About seventy per cent of crop.

Oats—About sixty per cent of crop.

Wheat—Good, but very little raised.

Rye—Fair crop.

Barley—About thirty per cent of crop.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Very little raised.

Sorghum—Very little raised.

Timothy—Good crop.

Clover—Good crop.

Prairie Hay—None.

Potatoes—Early crop good; late crop not so good.

Vegetables—About the average.

Apples—Practically none.

Other Fruits—Small fruits good; others not much good.

Cattle—Below the average of other years.

Horses—Below the average of other years.

Swine—Below average of other years.

Sheep—Below average of other years.

Poultry—About average of other years.

Bees—Below average.

Report of Fair—Held at Wilton Junction, September 14, 15, 16, 1909.

O'BREN.

J. B. MURPHY, SUTHERLAND, OCTOBER 16, 1909. L

General Condition of Crops and Season—Late spring, wet and cold; latter part of the summer hot and dry. Corn crop fine. Barley and oats did not thresh out good on account of rotting in shock. Hay was a little above the average.

Corn—Largest acreage in years and will average about thirty to fifty bushels per acre; quality A No. 1.

Oats—Large acreage; but one-half to two-thirds of stand on account of wet, cold spring; yield twenty-five to thirty-five bushels per acre; quality good.

Wheat—Very little raised.

Rye—None.

Barley—Small acreage and very poor.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—Fair acreage; yield and quality good.

Clover—Fair acreage; crop and quality good.

Other Grains and Grasses—Very little.

Potatoes—Large acreage; late potatoes poor; early crop large.

Vegetables—Plenty.

Apples—Plenty.

Other Fruits—Scarce.

Cattle—Smaller number than usual being fed on account of high price of feed.

Horses—Good quality and high in price.

Swine—About half the usual number; quality good as a rule, and no disease to speak of.

Sheep—Large number of sheep being fed, but not so many raised; quality good and good yield of wool.

Poultry—Plentiful, but a scarcity of eggs.

Bees—Very scarce.

Drainage—Lots of tiling and drainage of a permanent character.

Other Industries—Building is rapid and substantial; many farmers moving to town; automobiles plentiful; general good condition shown.

Lands—Have advanced in price from $5 to $20 per acre, average land being worth $100.

Report of Fair—Held at Sutherland, September 8, 9, 10, 1909. Attendance the largest in the history of the fair. Large exhibits in all departments except agricultural.

O'BRIEN.

J. W. MAUS, SHELDON, OCTOBER 3, 1909.

General Condition of Crops and Season—Good.

Corn—Good.

Oats—Fair.

Wheat—Small acreage, but good.

Rye—None.

Barley—Poor.

Flax—None.

Buckwheat—None.

Millet—Very small acreage.

Sorghum—Poor.

Timothy—Fair.

Clover—Good.

Prairie Hay—Very little.

Potatoes—Good.

Vegetables—Good.

Apples—Good.

Other Fruits—Good.

Cattle—Good.

Horses—Good.

Swine—Short crop.

Sheep—Scarce.

Poultry—Plentiful.

Bees—Few.

Drainage—A great deal of work being done.

Lands—High; $80 to $150 per acre.

Report of Fair—Held at Sheldon, August 24, 25, 26, 27, 1909. Fine weather but small attendance.

OSCEOLA.

H. C. LYMAN, SIBLEY, 1909.

General Condition of Crops and Season—Owing to the unusally wet summer crops were very uneven, ranging from a total failure on level lands to more than an average on dry lands.

Corn—From nothing to 75 bushels per acre; average 30 bushels per acre; about 10 per cent still in the field.

Oats—Average 25 bushels per acre with quality the best it has been for years.

Wheat—Not much raised; quality poor.

Rye—Very little raised; quality good; average yield 25 bushels.

Barley—Not much grown; quality very good; yield 25 bushels per acre.

Flax—Very little grown; quality good; yield 15 bushels per acre.

Buckwheat—None raised.

Millet—Good crop cut for hay; yield two tons per acre.

Sorghum—None grown.

Timothy—Good; average yield two tons per acre.

Clover—Good; average yield two tons per acre.

Prairie Hay—Very little grown; yield two tons per acre; quality good.

Potatoes—Light yield; quality good; yield 100 bushels per acre.

Vegetables—Good; very few raised for market here.

Apples—Light crop; quality good.

Other Fruits—Cherries a good crop; plums small crop; gooseberries, currants and grapes a fair yield.

Cattle—Have done well on grass. More cows being kept but about the usual number of cattle on feed.

Horses—Condition good; no disease. More colts being raised than formerly.

Swine—Small crop of pigs; no disease.

Sheep—Condition good; no disease; not many sheep in county.

Poultry—A larger number of chickens raised than usual. Very few turkeys; usual number of ducks and geese; no disease.

Bees—Made very little honey; not as many new swarms as usual.

Drainage—More tiling and ditching done than any previous year. People would have done more but were unable to get tile.

Other Industries—This is almost wholly an agricultural county.

Lands—Have advanced in price about $20.00 per acre; sells quite readily at from $65.00 to $110.00 per acre.

Report of Fair—No fair held in this county.

PAGE.

D. D. STITT, CLARINDA, OCTOBER 20, 1909.

General Condition of Crops and Season—Early season wet; almost impossible to work bottom land. Very dry weather for fall plowing and sowing of wheat.

Corn—Crop and quality good on dry and sod ground; old ground very spotted; not much on low land.

Oats—Best quality and yield for several years.

Wheat—Quality fair; average yield about twenty bushels.

Rye—Small acreage of spring rye; fair crop.

Barley—Very small acreage; light crop.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Not generally grown; some extra heavy millet sown on account of too wet for corn.

Sorghum—Very little grown.

Timothy—Good; fine quality.

Clover—Crop considerably damaged.

Prairie Hay—Very little grown, but extra fine.

Other Grains and Grasses—Blue grass extra good this year.

Potatoes—Early potatoes good quality and yield; late potatoes poor.

Vegetables—A good crop.

Apples—An extra crop in quality and yield.

Other Fruits—Few peaches; pears, cherries and small fruits good.

Cattle—Several herds of pure bred cattle.

Horses—No importing firms, but several firms feed large numbers.

Swine—Plentiful and of good breeding.

Sheep—Double the number of one year ago; have done well.

Poultry—One firm makes large shipments; a number of firms handle fancy poultry.

Bees—Not much care taken of bees generally. One large apiary ships to many different countries.

Drainage—Using all the tile that can be bought and laid.

Other Industries—Wagon works, lawn mower factory, knitting mill and canning factory. Plenty of room for more enterprises.

Lands—Good. $125 to $200 per acre where selling.

Report of Fair—Held at Clarinda, September 7, 8, 9, 10, 11, 1909. Good display in all departments. Heavy rains during the fair.

PAGE.

A. W. GOLDBERG, SHENANDOAH, OCTOBER 15, 1909.

General Condition of Crops and Season—Very good.

Corn—Above the average.

Oats—Good.

Wheat—Good.

Rye—Very little raised.

Barley—None.

Flax—None.

Buckwheat—None.

Millet—Very little.

Sorghum—None.

Timothy—Very little.

Clover—Fair.

Prairie Hay—None.

Potatoes—Good.

Vegetables—Good.

Apples—Extra large crop.

Other Fruits—Strawberries and cherries good; grapes poor; no peaches.

Cattle—Not as many feeding as formerly.

Horses—Normal, with soaring prices.

Swine—About half as many as a year ago.

Sheep—Very few here.

Poultry—Good, plentiful, and big prices for them.

Bees—Very few.

Drainage—Good.

Other Industries—Prosperous.

Lands—Prices high; still advancing and hard to get.

Report of Fair—Held at Shenandoah, August 9, 10, 11, 12, 13, 1909. Good record attendance, and the most satisfactory meeting ever held. Will perhaps make for clear profit the cost of our improvement this year, which is around $2,500.

PALO ALTO.

M. C. LARSON, EMMETSBURG.

General Condition of Crops and Season—We had ideal spring weather for putting in crops up until May 22d, when wet weather set in. This continued until the first of July, thus leaving quite a number of fields unplanted. However, we had dry weather during haying, harvesting and thrashing.

Corn—On well tiled land it yielded from 50 to 60 bushels per acre and of good quality. We had a killing frost October 16th.

Oats—Good quality but light yield.

Wheat—Small acreage but yielded from 15 to 22 bushels per acre.

Rye—Fair crop but small acreage.

Barley—Poor crop.

Flax—None raised.

Buckwheat—Very little sown.

Millet—Fair crop.

Sorghum—None raised.

Timothy—Yielded a large crop.

Clover—Above the average and was put up in good condition.

Prairie Hay—Heavy crop.

Other Grains and Grasses—Blue grass and white clover has taken hold of the pastures and cattle have done well.

Potatoes—Very heavy crop and of excellent quality.

Vegetables—Root crops rather light but tomatoes in abundance all season and a good supply stored away for winter use.

Apples—Early varieties below average; fall apples average crop; very few winter apples.

Other Fruits—Raspberries and blackberries yielded a heavy crop; gooseberries and currants an average yield; strawberries poor.

Cattle—In excellent condition as pastures have been good.

Horses—Farmers are raising more colts than usual and horses are selling at good prices.

Swine—Have done well but pig crop was rather light last spring.

Sheep—Are more extensively raised then formerly; some farmers have as many as 300 sheep and report good profits.

Poultry—Have done well the past season.

Bees—Not as good as usual.

Drainage—A good deal of tile has been laid the past season and farmers are hauling tile for next season.

Other Industries—The dairy industry is a profitable one and a number of cement tile factories have been built in the county and are running full time to supply the demand.

Lands—Selling from $60 to $100 per acre, according to location and improvements. As tile has been laid land goes by jumps.

Report of Fair—No fair held last season.

PLYMOUTH.

J. [illegible] REDMOND, LEMARS, OCTOBER 21, 1909.

General Condition of Crops and Season—Too much rain, but general condition of crops is good.

Corn—Acreage one hundred and five per cent; average yield thirty-five bushels; quality about No. 2 and 3.

Oats—Good quality; average yield about forty bushels per acre.

Wheat—Eighty per cent of average crop; yield twelve bushels per acre; good quality.

Rye—None raised.

Barley—Ninety-five per cent of crop; yield thirty-five bushels per acre; good quality.

Flax—None raised.

Buckwheat—None raised.

Millet—A few farmers raise a small amount for feeding their cows.

Sorghum—None raised.

Timothy—One hundred per cent; good quality.

Clover—One hundred per cent; good quality.

Prairie Hay—Seventy-five per cent; damaged some by floods in low places.

Potatoes—One hundred per cent; good quality; yield about seventy-five bushels per acre.

Apples—Early apples a good crop and good quality.

Other Fruits—Plums were a good crop but not a large yield.

Cattle—Ninety per cent.

Horses—One hundred per cent of crop.

Swine—Seventy per cent of crop, but prices are high and farmers are selling off close.

Poultry—One hundred per cent; many large flocks of good birds.

Lands—One hundred per cent; there is hardly an acre of waste land in the county.

Report of Fair—No fair held in the county.

POCAHONTAS.

J. P. MULLEN, FONDA, OCTOBER 21, 1909.

Corn—Less than an average crop, seventy-six per cent.

Oats—Quality good; yield small, seventy per cent.

Wheat—Little grown; crop eighty per cent.

Rye—Fair; crop eighty-five per cent.

Barley—Average; crop eighty-five per cent.

Flax—Good; crop eighty-nine per cent.

Buckwheat—Fair; crop eighty-five per cent.

Millet—Good; crop ninety per cent.

Sorghum—Good; crop ninety-one per cent.

Timothy—Good; crop ninety-one per cent.

Clover—Good; crop ninety-one per cent.

Prairie Hay—Good; crop ninety-five per cent.

Potatoes—Average; crop eighty-five per cent.

Vegetables—Good; crop eighty-nine per cent.

Apples—Good; crop ninety-four per cent.

Other Fruits—Good; crop ninety-two per cent.

Cattle—Scarcity of good cattle and number growing less; young crop less than average.

Horses—Quality growing better; colt crop good in quality and numbers, better than average. Good demand for salable horses at good prices.

Swine—Young crop small; a general scarcity is very noticeable.

Sheep—An average crop.

Poultry—Good crop of chicks.

Bees—Scarce.

Drainage—Improvement along this line is wonderful; much tiling is being done and big dredges are visible along every water shed.

Other Industries—Cement factory and flour and feed mill needed.

Lands—Rapidly increasing in value, prices ranging from $75 to $125 per acre. No good farms for sale unless at an exceptionally good price.

Report of Fair—Held at Fonda, August 3, 4, 5, 1909. Was a success in every department; the best in the history of the fair.

POLK.

M. R. SADLER, MITCHELLVILLE, JANUARY 21, 1910.

General Condition of Crops and Season—All crops below normal with the exception of winter wheat and grasses. The early spring months were abnormally wet while August and part of September were abnormally dry. The late fall months were wet and cold.

Corn—Below average both in quality and yield on account of excessive moisture early in the season and a drouth at time of earing. Corn was badly lodged by winds and this delayed cribbing.

Oats—Below the average, caused by excessive wet and cold weather at the time of germinating, developing and maturing.

Wheat—Winter fully normal in yield and quality; spring below normal in yield but fair in quality.

Rye—Normal both in yield and quality.

Barley—Not enough raised to base a report upon.

Flax—None raised.

Buckwheat—None raised.

Millet—Yield above normal; quality good.

Sorghum—None raised.

Timothy—Above normal in yield and quality of hay but seed was only normal.

Clover—Above normal in quantity of hay but below normal in quality. Seed below normal in yield but quality was normal.

Prairie Hay—Normal in both quantity and quality.

Potatoes—Below normal in yield; quality good.

Vegetables—Early vegetables all normal in quantity and quality; late vegetables were more scarce.

Apples—Abnormally low in yield and quality.

Other Fruits—Cherries below normal in quantity and quality; berries above normal in both quantity and quality; no peaches, and plums were not a good yield.

Cattle—Above normal in increase and condition.

Horses—Above normal in increase and condition.

Swine—Condition normal but below normal in increase and quantity.

Sheep—Not enough raised upon which to base a report.

Poultry—Condition normal but increase and quantity below normal.

Bees—Condition and increase in stock normal; quality and quantity of product normal.

Drainage—Increasing in quantity and improving in construction and capacity.

Other Industries—Progressing.

Lands—Increasing in price; deteriorating in productive value and capacity.

POTTAWATTAMIE.

C. H. READ, AVOCA, OCTOBER 27, 1909.

General Condition of Crops and Season—Good.

Corn—Good.

Oats—Good.

Wheat—Poor.

Rye—Poor.

Barley—Poor.

Flax—None.

Buckwheat—None.

Millet—Fair.

Sorghum—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—None.

Potatoes—Good.

Vegetables—Good.

Apples—Good.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Drainage—Good.

Lands—Increasing in value.

Report of Fair—Held at Avoca, September 7, 8, 9, 10, 1909.

POWESHIEK.

JAMES NOWAK, MALCOLM, OCTOBER 29, 1909.

General Condition of Crops and Season—A rather cold, backward spring, a severe drouth in August, and a very early freeze the first half of October, damaging apple and potato crops, also some of the late corn.

Corn—Not as good yield and quality as last year; damaged by dry weather in August. Average yield for the county estimated at thirty-two and one-half bushels per acre.

Wheat—Small acreage but good crop; average yield sixteen and one-half bushels per acre.

Rye—Small acreage; yield about seventeen bushels per acre.

Barley—Average yield about twenty-six and one-half bushels per acre.

Flax—None raised.

Buckwheat—Small acreage; quality good and yield fair.

Millet—Very little raised; fair results.

Sorghum—Limited acreage; fair yield and good quality.

Timothy—Good quality; fair price; average about one and one-half tons per acre.

Clover—Yield about one ton per acre.

Prairie Hay—None cut.

Other Grains and Grasses—Pastures have been good, except late in summer when grass was damaged by dry weather.

Potatoes—Good yield of early varieties; late potatoes suffered from drouth in August and freeze in October.

Vegetables—Cucumbers and cabbage suffered from drouth; other varieties good.

Apples—Light crop; damaged by late frosts in spring and early freeze in October.

Other Fruits—Poor year for nearly all kinds of fruits.

Cattle—Industry is growing. Prices good and demand large. Butter cream, and even skim milk, are bringing good prices. No disease.

Horses—Large demand for horses of all kinds; prices high.

Swine—The most profitable industry on the farm, bringing quick returns. Prices high and demand larger than the supply. No disease.

Sheep—Not many raised here. Prices have been good.

Poultry—This industry is profitable; eggs are high the year around and chickens are in demand at big prices.

Bees—Crop about as usual.

Drainage—Mile after mile of tile is put down every year. Every one realizes this is an improvement that pays for itself in a few years by increased yields.

Other Industries—All branches of business have had a busy season. Towns are improving as well as the farms; over $300,000 worth of paving was contracted for in the towns of this county.

Lands—Advancing in price each year. A wide range of prices; improved farms sold from $70 to $200 per acre last year.

Report of Fair—Held at Malcolm, August 24, 25, 26, 1909. A success in every way. Exhibits were good except in live stock classes where the drouth and exceedingly warm weather interfered with the show. The attendance was fair.

POWESHIEK.

I. S. BAILEY, JR., GRINNELL, SEPTEMBER 18, 1909.

Corn—Dry weather cut the percentage about twenty per cent.

Oats—Light yield; quality good.

Wheat—Winter wheat one hundred per cent; spring wheat seventy-five per cent.

Rye—One hundred per cent.

Barley—Fifty per cent.

Flax—None raised.

Buckwheat—None raised.

Millet—Ninety per cent.

Sorghum—None raised.

Timothy—One hundred per cent.

Clover—One hundred per cent.

Prairie Hay—One hundred per cent.

Potatoes—Fifty per cent.

Vegetables—Eighty per cent.

Apples—Twenty-five per cent.

Other Fruits—Ninety per cent.

Cattle—Condition good; not many will be fed on account of high price of corn.

Horses—Good; very high in price.

Swine—Seventy-five per cent of crop; healthy condition.

Sheep—Condition good.

Poultry—Good.

Bees—Good; honey one hundred per cent.

Drainage—Will be more tiling done this fall than usual.

Lands—Selling from $80 to $210 per acre; many farms changing hands.

Report of Fair—Held at Grinnell, September 6, 7, 8, 1909. Exhibits larger than usual. Rain interfered somewhat with attendance.

RINGGOLD.

I. F. HALL, TINGLEY, SEPTEMBER 23, 1909.

General Condition of Crops and Season—Season very wet and late.

Corn—About two-thirds of a crop and rather late.

Oats—Quality good; average yield.

Wheat—Small acreage; good quality; yield per acre seventeen bushels.

Rye—Good quality; fair yield.

Barley—None raised.

Flax—None raised.

Buckwheat—Good crop.

Millet—Excellent.

Timothy—Extra.

Clover—Poor.

Prairie Hay—Small acreage.

Potatoes—Fair yield.

Vegetables—Good.

Apples—Splendid.

Other Fruits—Good, except peaches.

Cattle—Never better.

Horses—Never better.

Swine—Never better.

Sheep—Never better.

Poultry—Good.

Bees—Have done well.

Drainage—On the increase.

Lands—Increasing in value.

Report of Fair—Held at Tingley, September 8, 9, 10, 11, 1909. Weather was unfavorable but the fair was considered a success.

SAC.

S. L. WATT, SAC CITY, OCTOBER 26, 1909.

General Condition of Crops and Season—Early part of the season very wet and backward, making the fields very weedy. A big freeze the second week in October.

Corn—Crop forty per cent short but of good quality.

Oats—Light yield, but heavy and of good quality.

Wheat—Good quality but small acreage.

Rye—Not much raised but good quality.

Barley—Considerable raised; quality good. Many using barley as nurse crop for seeding.

Flax—Small acreage; quality good.

Buckwheat—Small acreage, but fair crop and of good quality.

Millet—Very good and lots raised.

Sorghum—Lots raised and of good quality; used for syrup and feed.

Timothy—A fine quality and seeded very heavy.

Clover—First crop somewhat damaged by weather; second crop not so good and did not seed very well on account of dry weather.

Prairie Hay—First class, but not much left here.

Other Grains and Grasses—Blue grass fine, making excellent pasture; red top good; alfalfa not much raised and not a success yet. Sweet corn is being raised by many farmers and pays well on account of canning factory.

Potatoes—Good acreage; fair crop.

Vegetables—Turnips, cabbage, pumpkins and squash not very good.

Apples—Very large but of poor quality; crop damaged by early freeze.

Other Fruits—Plums and cherries very poor; raspberries, blackberries and grapes good.

Cattle—Have done well; very little disease; many raised; big price; many fine herds of different breeds.

Horses—Bringing big prices; many colts being raised; quality fine.

Swine—Very healthy, but young pigs are scarce.

Sheep—Quite a number raised here; good and fine but not very heavily fleeced, running from seven to ten pounds.

Poultry—Very good. Produce company handled about 200,000 pounds.

Bees—Season unfavorable for a good honey crop.

Drainage—A great deal of tile being laid; many draining the high lands also.

Other Industries—Cement tile factory doing a large business. Canning factory canned 1,600,000 cans of corn. Other factories are doing a large business.

Lands—All land good; no cheap land left, and prices increasing. Some good farms changing hands; prices ranging from $80 to $150 per acre.

Report of Fair—Held at Sac City, August 10, 11, 12, 13, 1909. A financial success and every day a big one. Many improvements made and money in the treasury. People are becoming more interested in the fair.

SCOTT.

MILES COLLINS, DAVENPORT, APRIL 2, 1910.

General Condition of Crops and Season—Crops were good and prices high.

Corn—Quantity was about up to or a little better than average. Quality is poor, being soft and mouldy due to early snow which prevented husking and buried some corn until the snow melted in March, 1910.

Oats—Good heavy crop; about 30 bushels to the acre.

Wheat—Good crop but not much wheat planted.

Rye—Light crop, what little is raised is generally for local breweries.

Barley—Average about 25 bushels; not much raised.

Flax—None raised.

Millet—Some raised for hay and makes good feed if cut and cured without rain.

Sorghum—None raised.

Timothy—Good crop, though lighter than last year; price $18.00 per ton.

Clover—Good hay crop, but poor year for seed crop.

Prairie Hay—Very little of the old prairie hay left here.

Other Grains and Grasses—Alfalfa is in an experimental state, though one field was cut four times this season.

Potatoes—Good crop, but prices low as 30 cents per bushel. Early potatoes did better than late ones.

Vegetables—Cabbages, beans, and garden truck was generally a good crop. Tomatoes were scarce and slow to ripen, due to cold summer.

Apples—Almost a total failure, due to late frost.

Other Fruits—Pears did well; no peaches; plums were a light crop; cherries and berries did very well.

Cattle—Average number, mostly butcher stock but close to town are dairy cattle. Snow covered the ground for two months in winter, thus making forage scarce; feed high priced.

Horses—Average number although a little higher in price; the general demand is for large horses.

Swine—Short crop and scarce; prices higher than for several years.

Sheep—Not many in Scott county but sheep do well here.

Poultry—Lots of chickens raised but the demand is greater than the supply; fresh eggs always in demand at good prices.

Bees—Few bees in county; honey crop light.

Drainage—Considerable tiling on small scale; two large ditches are planned near the Wapsipinicon River.

Other Industries—Corn Products Company; Pickling Works; Farmers Grange Store.

Lands—Steady advance in value, probably land is worth double what it was ten years ago and presumably set back some by panic in fall of 1908.

Report of Fair—Fair is dead. Farmers institutes held at Princeton and Eldridge were well attended.

SHELBY.

FRED FRAZER, HARLAN, AUGUST 22-26, 1909.

General Condition of Crops and Season—Although we had an excess of rain in May and June the general condition of crops is above the average.

Corn—Large acreage; good yield and good quality but blown down very badly in some localities.

Oats—Usual acreage; quality best in years.

Wheat—Fair quality; about the usual acreage and yield.

Rye—Not much sown only for swine pasture.

Barley—About the usual acreage; yield and quality poor.

Flax—Not much sown.

Buckwheat—Not much sown.

Millet—Small acreage; quality good.

Sorghum—Small amount raised.

Timothy—Acreage not up to former years; quantity and quality good.

Clover—The crop for hay good; not much cut for seed.

Prairie Hay—Very little left in county.

Other Grains and Grasses—Very little raised.

Potatoes—Very good yield; good quality; price fifty cents per bushel.

Vegetables—An average crop.

Apples—Both yield and quality the best in years but owing to the early freeze about one-half of the winter apples froze on the trees.

Other Fruits—Average crop.

Cattle—Not as many steers on feed as usual.

Horses—Breeders are improving the grade by keeping better mares and securing the service of good stallions. There is a noticeable interest in the draft breeds and the prices for all kinds of horses are high.

Swine—The number of spring pigs is a little below the average; farmers make a specialty of this industry, Duroc Jersey, Poland China and Chester Whites prevail.

Sheep—The raising of sheep is not followed to any great extent but there are some very good sheep in the county.

Poultry—Quality improving.

Bees—Not many raised in county.

Drainage—Good.

Other Industries—Brick plant, gas engine factory; two loom factories; rug factory; canning factory; glove and mitten factory; cement block factory, all located at the county seat furnish employment for about one hundred men.

Lands—Advancing in price; market value fully $15.00 per acre more than last year.

Report of Fair—Held at Harlan, August 22-25th; attendance large and the fair was a success in every particular. Had a large exhibit of stock and the fastest field of horses ever on the grounds.

SIOUX.

H. SLIKKERVEER, ORANGE CITY, OCTOBER 4, 1909.

General Condition of Crops and Season—Early spring was very wet and cold.

Corn—About an average crop.

Oats—Heavy in weight; runs from 30 to 40 bushels per acre.

Wheat—About an average crop; fall wheat good.

Rye—None raised in this locality.

Barley—Very poor this year.

Flax—None raised.

Buckwheat—None grown here.

Millet—Good crop.

Sorghum—None raised this year in this locality.

Timothy—Good crop.

Clover—Very good.

Prairie Hay—Good crop but lots lost on account of heavy rains.

Other Grains and Grasses—Good.

Potatoes—Fair crop.

Vegetables—Very good.

Apples—Poor; not more than 50 per cent of a crop.

Other Fruits—Poor.

Cattle—In good condition.

Horses—Look good and are doing well.

Swine—Good; very little sickness this year.

Sheep—Have done well and in good condition.

Poultry—Good; have done well this year.

Bees—Did fairly well; very few bees kept here.

Drainage—Natural condition; nature of the soil such that it does not require much drainage.

Other Industries—Dairy farming and gardening have been profitable this year; prices very good.

Lands—Good demand; prices from $100 up; great demand for the same.

Report of Fair—Held at Orange City September 8-10th inclusive. The attendance and weather were very good. All exhibits good with the exception of hogs, which were below the average. The races and other attractions were good and those in attendance were well pleased with the fair. The Association allows no liquor nor any kind of gambling on the grounds.

STORY.

W. D. SMITH, NEVADA, OCTOBER 25, 1909.

General Condition of Crops and Season—Spring was about two weeks late and was cold and wet; ground in bad condition for early cultivation. There were excessive rains during the first half of the season and during the last half it was dry. Some of the oats seed was destroyed by freezing after it had been sown. In the southern half of the county there was so little rain during earing time that the yield of corn was naturally reduced. The northern half of the county was better as rain fell there during August.

Corn—In the northern part of the county all fields that were properly tilled will give good returns but in the southern half of the county the yield will be only fair. Corn will probably average about 40 bushels per acre. not taking into account the fields which were destroyed by excessive rains.

Oats—The yield varied greatly; some fields yielded only 15 bushels per acre while others threshed out nearly 50 bushels per acre. The average yield is about 25 bushels per acre.

Wheat—There was an increased acreage of winter wheat, nearly all of which gave good returns; yielding from 20 to 40 bushels per acre. But little spring wheat sown.

Barley—Not much grown in this county. The crop was fairly good, both in yield and quality.

Flax—Not enough raised to be worthy of mention.

Buckwheat—Very little raised.

Millet—Good yield.

Sorghum—None grown.

Timothy—A large yield.

Clover—First crop abundant; second crop not of much consequence. Very light yield of seed because of lack of rainfall in latter part of the season.

Prairie Hay—But little in the county. Wherever the original sod remains the growth was heavy this year.

Potatoes—Early potatoes fairly good crop; late varieties small yield on account of dry weather in the latter part of the season.

Cattle—Many farmers are taking more interest in improving the breeds.

Horses—There is increased interest in this industry and quite a large number of farmers are making a specialty of raising good horses. Several shipments of imported horses were brought into this county this year.

Sheep—Not many sheep in this county.

Bees—Very little honey stored, owing to rainy, cold weather in the spring. It is doubtful if the swarms all have enough to winter them.

Drainage—Lands requiring drainage, and which could be drained by individual owner have most all been drained. Some quite large district drains have been completed while others are being constructed. Most of those interested in land in this county are strong in the opinion that money expended for tile drainage is a good investment.

Lands—Have continued to increase in price; a considerable number of farms have changed ownership this year at a higher value than ever before.

Report of Fair—September 28-Oct. 1, inclusive.

STORY.

A. W. SOUTHWICK, CAMBRIDGE, JANUARY 22, 1910.

General Condition of Crops and Season—The year of 1909 was backward, cold, wet, and unfavorable for all crops. It was wet and cold until August 1st and then very dry. The wind blew the corn down very badly. Corn gathering was retarded until late and a large acreage is still in the field at this time.

Corn—The average of the corn crop was about 30 bushels per acre with about 40 per cent marketable.

Oats—Was of fair quality and averaged about 25 bushels per acre.

Wheat—Spring wheat averaged about 18 bushels per acre. Winter wheat was good, averaging about 22 bushels per acre.

Rye—Averaged about 15 bushels.

Buckwheat—Increase in acreage owing to the other crops being drowned out in places. Averaged about 26 bushels.

Millet—An immense crop owing to low places. This crop made about 4 ton of excellent feed.

Sorghum—Made about 150 gallons per acre; fine quality.

Timothy—Heavy yield; made 2 tons per acre and was put up in good condition.

Clover—A heavy crop.

Prairie Hay—Good; making about 1 1-2 tons per acre.

Potatoes—Not a good crop; average about 40 bushels per acre.

Vegetables—Good and fair quality.

Apples—Very nearly a failure—25 per cent.

Other Fruits—Grapes 90 per cent, small fruit 100 per cent.

Cattle—All in good condition and prices good but owing to the hard winter and the scarcity of feed prices have decreased.

Horses—Good horses in big demand and prices high. Horses all in good condition.

Swine—A decrease from 1908 owing to the cold, wet spring.

Sheep—Very few sheep here but what we have are good in quality and condition.

Poultry—Plentiful and prices are good.

Bees—The season too wet for honey.

Drainage—More tile being put in than ever before; farmers are just learning the value of a well tiled field.

Lands—Prices are still on the increase and many farms are changing hands at $125 to $175 per acre.

TAMA.

A. G. SMITH, TOLEDO, 1909.

General Condition of Crops and Season—The season has not proved favorable for crops, except grains and the early vegetables, on account of excessive and hard rains in May and June and six weeks of succeeding drouth and very hot weather.

Corn—Late planting interfered with by rains and the first plantings badly washed out by rains. Very weedy as a rule. Estimated average about two-thirds of a crop; 40 bushels per acre.

Oats—Crop good generally both in quality and quantity; average yield 30 bushels per acre and generally overweight.

Wheat—Not much spring wheat grown; average yield from 15 to 18 bushels per acre and over weight. Winter wheat, although not a large acreage, has yielded well; about 25 bushels per acre and of good quality.

Barley—Very little raised but what was raised is of good quality and quantity; yield averaging 25 bushels per acre.

Flax—Don't know of any sown in the county.

Buckwheat—Don't know of any.

Millet—Very little if any.

Sorghum—Very little in county.

Timothy—Good crop of hay and most of it put up in good condition.

Clover—First crop good and secured in good condition; very little cut for seed.

Prairie Hay—Very little to be cut.

Potatoes—Very poor yield; general average short; quality good. Where the ground was fall plowed and the planting was done by the 20th of April the yield for Rural New Yorkers was 125 to 180 bushels per acre. Early varieties yielded from 60 to 80 bushels per acre.

Vegetables—Short crop and not good quality on account of the long drouth and extremely hot weather.

Apples—Short and of poor quality; very little spraying done.

Other Fruits—Small fruit generally good in yield; no peaches; plums about as usual.

Cattle—Good prices have prevailed; abundant pasture and prolific breeders this season; well graded in this county.

Horses—Good; shipping demand for both road and draft horses at $150 to $250.

Swine—A fair breeding season; prices good; old stock sold close.

Sheep—Shropshires the prevailing breed. Flocks of one to two hundred head are growing larger.

Poultry—Not a good breeding season; market active all through the season. Eggs have been twenty cents, and above, all summer.

Bees—Do not appear as plentiful as in most preceding years.

Drainage—Such excellent results have followed work of former years that much is being done this year.

Other Industries—The season has been a favorable one for canning corn; drouth ripened the corn rapidly. The output was not so large this year as last.

Lands—Still in good demand and prices advancing. Lands five and six miles from railroad stations, with fair improvements, selling readily at $100 to $125 per acre.

Report of Fair—Held at Toledo, September 21-24th inclusive. Entries in all departments were well filled; racing good; stock exhibits were fine and the weather was very good.

TAYLOR.

[illegible] S. LEWIS, BEDFORD, AUGUST 9, 1909.

General Condition of Crops and Season—Very good; prices are high on all farm products.

Corn—Fair.

Oats—Good.

Wheat—Fair.

Rye—Not much grown.

Barley—Medium.

Flax—Medium.

Buckwheat—Fair.

Millet—Good.

Sorghum—Good.

Timothy—Good crop.

Clover—Fair.

Prairie Hay—Good, what there is of it.

Potatoes—One-half crop.

Vegetables—Good.

Apples—Fair crop.

Other Fruits—Fair.

Cattle—Normal.

Horses—Good.

Swine—Good supply.

Sheep—Good supply.

Poultry—Extra good.

Bees—Fair.

Drainage—Increasing throughout the farming districts.

Lands—Very high and increasing in value.

Report of Fair—Held August 31-September 3d inclusive. Although the weather was not good the fair paid out in full.

UNION.

GEORGE DAY, 1909.

General Condition of Crops and Season—Not favorable although grains and fruit did very well.

Corn—A great deal of corn was planted late on account of early rains and an early freeze in October damaged it greatly. There is still some corn in the fields on account of being covered with snow.

Oats—Generally a good crop; good quality.

Wheat—Fair crop; good quality.

Rye—Not much rye but what there is is of good quality.

Barley—Good.

Flax—None raised in this county.

Millet—Good but not much raised.

Sorghum—Fair; where raised for feed it turned out well.

Timothy—Very good crop; season being favorable at cutting time.

Clover—Good crop.

Prairie Hay—None.

Potatoes—Not a good crop but seem to be of good quality.

Vegetables—Not good.

Apples—Large crop but was caught by the October freeze.

Other Fruits—Very good in general.

Cattle—Generally fair but on account of snow are taking more feed than usual. There are plenty of cattle for the feed and pasture.

Horses—Good property and prices are high for good animals.

Swine—Not so many pigs raised as usual and a great many unfinished hogs are shipped out.

Sheep—Did well and seem to be a good animal for this county.

Poultry—Seems to be above the average.

Bees—Didn't do as well as usual.

Drainage—Farmers are beginning to see the necessity of drainage and are doing more each year.

Lands—Are advancing in price.

VAN BUREN.

U. G. RICE, OCTOBER 30, 1909.

General Condition of Crops and Season—Early season wet; later dry.

Corn—About 70 per cent of an average crop.

Oats—30 bushels per acre.

Wheat—18 to 20 bushels per acre.

Rye—None.

Barley—None.

Flax—None.

Buckwheat—None.

Millet—Good.

Sorghum—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—None.

Potatoes—Fair.

Vegetables—Good.

Apples—Largest crop known.

Other Fruits—Fair crop with the exception of peaches.

Report of Fair—Good fair although it rained on the big day. The dates were August 31-September 3d inclusive.

WAPELLO.

H. R. BAKER, ELDON, SEPTEMBER 20, 1909.

Corn—About an average crop, ranging from 30 to 60 bushels per acre.

Oats—Not quite as many sown as usual; crop above average.

Wheat—Larger acreage than usual; good yield and good quality.

Rye—Smaller acreage than usual; average yield and quality good.

Barley—No barley raised in this locality.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Very small acreage; average yield.

Sorghum—About the average acreage and yield.

Timothy—Good crop; averaging from 1½ to 2 tons per acre; large acreage and of good quality.

Clover—Small acreage; quality good.

Prairie Hay—None.

Other Grains and Grasses—Some few farmers experimenting with alfalfa with good results.

Apples—Good crop and good quality.

Cattle—About the same number of cattle in this locality as in the past few years; quality fair.

Horses—Scarce but improving in quality.

Swine—Very scarce; hardly half the average number; prices high.

Sheep—Not many sheep. Some improvement.

Poultry—Considerable interest taken in poultry raising.

Bees—None.

Drainage—Great amount of drainage being done.

Lands—Range in price from $30.00 to $150.00 per acre.

Report of Fair—Held September 8-10th inclusive. Exhibits of live stock not up to average on account of rain on entry day; attendance light on account of rain also.

WARREN.

JOE MCCOY, INDIANOLA, SEPTEMBER, 1909.

General Condition of Crops and Season—Quite good, especially hay, grass and corn.

Corn—Average.

Oats—Not as good as last year.

Wheat—Good average.

Rye—Not much raised.

Barley—Not much raised.

Flax—None.

Buckwheat—None.

Millet—Small acreage sown.

Sorghum—None.

Timothy—Good.

Clover—Just fair.

Prairie Hay—None.

Vegetables—Good.

Apples—Good.

Other Fruits—Good.

Cattle—In good condition.

Horses—Good and in good condition.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—Better than any previous year.

Lands—Selling at steady prices.

Report of Fair—Sept. 7-10th inclusive. We had the best all around fair we have ever held. Good races, good stock; attendance good and attractions good.

WEBSTER.

[illegible] 7, 1910.

General Condition of Crops and Season—Season of 1909 was very backward and much below the average until about June 25th when good growing weather began. Small grain and grass matured very nicely but was a light yield per acre.

Corn—That which was planted by May 25th on well drained and high land was of fair yield and sound in quality while that on low land and late plantings was of poor quality. 50 per cent of corn good; 50 per cent poor; some spoiled and about 30 per cent still in the field.

Oats—Frost and poor germination left oats a very thin stand. Favorable weather after heading gave grain good weight and quality, averaging about 20 bushels per acre.

Wheat—Very little wheat raised in county but was of fair quality and averaged 15 bushels per acre.

Rye—But little raised.

Barley—Fair; 30 bushels per acre.

Flax—Scarcely any raised.

Buckwheat—Very little raised.

Millet—Good crop for fodder but very poor yield in seed; not over 4 bushels in some cases.

Sorghum—Fair but very small acreage on account of late spring; about 100 gallons per acre.

Timothy—Good on high land; 2½ tons per acre; seed 4 bushels per acre.

Clover—Good on high land for hay, averaging about 2½ tons. No seed to mention.

Prairie Hay—Fair crop and put up in good condition; about 2 tons to the acre.

Potatoes—Fairly good and quality fine; late planting suffered by drouth before maturing; average about 125 bushels per acre.

Vegetables—Early planting very scarce on account of cool March weather; late planting did much better.

Apples—Scarce and wormy; poor quality.

Other Fruits—Grapes fair; plums and cherries scarce; gooseberries and currants good; raspberries and blackberries scarce; strawberries good.

Cattle—Went to pasture in poor condition but gained through the season.

Horses—Wet spring very hard on work horses on account of mud and scarcity of hay; foals were about the same as other years.

Swine—The increase of swine was very poor in the early part of the season on account of the wet, cold weather; later farrowing did much better but hog supply is much short of the average.

Sheep—About the average increase and in good condition.

Poultry—Early hatches about ½ crop; later hatches were much better; very little disease.

Bees—Spring very poor for first swarms and honey scarce all through the season.

Drainage—About the usual amount of drainage done for the season with prospects for much more for next season. Increasing the size of the mains after the season's experience with small tile.

Lands—In much better condition than other years for tiling; there being a greater acreage of fall plowing than usual; it is also better fertilized and drained.

Report of Fair—No fair.

WINNEBAGO.

C. K. NELSON, FOREST CITY, OCTOBER 16, 1909.

General Condition of Crops and Season—This section was visited this season by a large amount of rain after the grain was sown and this retarded the growth and damaged a great deal of the seed. The rain continued during most of the growing season but during the harvest the most favorable weather prevailed.

Corn—A large acreage was planted, which will yield about 45 to 50 bushels per acre; quality good and above the average.

Oats—A large acreage planted; poor yield, caused by too much rain early in the season, runs about 20 to 25 bushels per acre; quality good.

Wheat—Small acreage but yields a good crop; very good quality, best for years, running about 17 to 20 bushels per acre.

Rye—None raised.

Barley—Quite a large acreage sown, but yield and quality is very poor.

Flax—Very little raised, small yield.

Buckwheat—None raised.

Millet—Very little raised.

Sorghum—Not any raised.

Timothy—Large acreage and yielding a very good crop; probably 1½ to 2 tons per acre, not very much sown for seed.

Clover—About the same as timothy.

Prairie Hay—A great deal raised in this county; yields about 1 to 1½ tons per acre. All hay was put up in excellent condition.

Potatoes—All varieties yielded a large crop but quite a lot was damaged by the heavy frosts on October 12th and 13th.

Vegetables—Fair.

Apples—Summer and fall varieties yielded a fair crop while there are only a few winter varieties.

Cattle—Are in general good condition. The farmers are taking more interest in improving their stock than in former years.

Horses—Have done well. There will not be so many put on market this season as there will be no more than will supply the home demand.

Swine—Have decreased in number since last year; no disease reported.

Sheep—Very little has been done in this industry in previous years but of late the farmers seem to have taken more interest in sheep raising.

Poultry—This industry is rapidly growing and is one of the most profitable of industries. Thoroughbred poultry is fast taking the place of the scrub. There is a very noticeable improvement in this industry.

Bees—Not a great many raised although the usual amount of honey is to be had.

Drainage—The drainage districts have already been completed in this county and the 4th or District No. 6 is fast nearing completion. A great deal of tiling is also being done and all draining is giving satisfactory results. The approximate cost of constructing the 3 drains is about $200,000.00.

Other Industries—There are two canning factories in the county, which are a great benefit to the cities in which they are located and gives employment to a great number of people. At Forest City alone, this season, 660,000 cans of sweet corn was canned, thus being the product of about 500 acres of land and the farmer was paid $5.00 per ton for his corn. The farmers about Forest City were paid over $10,000 for this alone.

Lands—A great deal of land has changed hands this season and prices have advanced from $10 to $30 per acre. Land is selling from $50 to $100 per acre. The drainage done in this county has great influence in attracting foreign buyers. Parties buying in this county are mostly from the southern part of the state and all claim the soil is better than in any other part of the State.

Report of Fair—Held at Forest City, September 8-10th inclusive. The weather was the most favorable the society has been favored with and the attendance was better than for years. The exhibits in the live stock departments were much lighter than they have been for years as was also the case in the vegetable department. The speed program was not filled very well but the races were fairly good.

WINNEBAGO.

J. P. BOYD, BUFFALO CENTER, OCTOBER 26, 1909.

General Condition of Crops and Season—First class.

Corn—All right, averaging about 40 bushels.

Oats—Good quality but rather light in yield, averaging about 25 bushels.

Wheat—Good crop and quality but very little raised.

Rye—None.

Barley—Only a fair crop.

Flax—None.

Buckwheat—None.

Millet—Good; but very little planted.

Sorghum—None.

Timothy—Good crop.

Clover—Good.

Prairie Hay—Good.

Potatoes—First class; good quality and large yield.

Vegetables—Good.

Apples—Good.

Cattle—The usual number raised and they have done well.

Horses—Are in good condition and the usual number raised.

Swine—The average number raised and no disease reported.

Sheep—Very few raised in this locality.

Poultry—Have done well and large numbers are being raised, owing to the high prices paid for poultry and eggs.

Bees—Not very many here but what few there are did well.

Drainage—The most extensive drainage that has ever been done has taken place this year. Several drainage districts have been formed. The tile factory is far behind with its orders.

Lands—Selling at considerably advanced prices over last year. Several transfers have been made this fall.

Report of Fair—Held at Buffalo Center, September 14-16th inclusive. The fair was a success, notwithstanding that the rain greatly reduced the attendance the last two days.

WINNESHIEK.

L. L. CADWELL, DECORAH, OCTOBER 4, 1909.

General Condition of Crops and Season—Crops of all kinds above the average. A dry spell when corn was earing retarded the growth of ears but practically all corn in this county fully ripened before frost. The small grain season practically perfect; no rust on oats and all small grain and hay a big crop.

Corn—Yield 30 to 40 bushels per acre and 7-8 of it matured.

Oats—Yield about 30 bushels per acre; quality No. 3 white.

Wheat—Yield about 20 bushels; fine quality.

Rye—About 20 bushels; good quality.

Barley—About 30 bushels; quality very fine.

Flax—Good quality; yield about 10 bushels per acre.

Buckwheat—Practically none raised.

Millet—Very little raised; cut principally for hay.

Sorghum—Very fine quality; little raised.

Timothy—About 3 to 4 bushels; quality not quite up to average.

Clover—About 5 to 6 bushels; fair quality.

Prairie Hay—All tame hay in this county.

Other Grains and Grasses—Tame hay excellent, both in yield and quality.

Potatoes—Good sound quality and yielded about 150 bushels per acre.

Vegetables—All very fine and better than average yield.

Apples—Very fine but not over 25 per cent of a crop in this county, caused by trees being damaged by hail in 1908.

Other Fruits—All very fine quality but yield poor on account of the hail storm in 1908.

Cattle—About an average number of cattle and prices high.

Horses—High, scarce and hard to buy.

Swine—Healthy; about 80 per cent of average number.

Sheep—More sheep being raised each year; fine quality; prices good.

Poultry—Very fine poultry year; well matured and prices range 33 1-3 per cent higher than last year.

Bees—Not many raised; quality of honey very fine.

Drainage—No artificial drainage needed; county is very rolling and the natural drainage is very nearly perfect.

Other Industries—Mostly an agricultural county; very few factories. Taken all in all 1909 was one of the best years in the history of the county.

Lands—Very few farms for sale; prices range all the way from $70 to $100 per acre.

Report of Fair—Held August 24-27 inclusive. Fine attendance; weather perfect and fair was a success in every way.

WORTH.

I. E. [illegible], NORTHWOOD, OCTOBER 9, 1909.

General Condition of Crops and Season—General condition of crops good, although damaged somewhat by the wind and hail the latter part of July.

Corn—The crop will be above the average; fine weather in September has thoroughly ripened the crop and people are looking forward to a good yield.

Oats—The crop was of good quality but not a large yield.

Wheat—The crop here was the finest in years—some pieces yielding as high as 30 bushels per acre.

Rye—Not any sown in this county to speak of.

Barley—Was good quality; feed barley averaging from 15 to 25 bushels per acre.

Flax—Very little grown and only of medium quality and yield.

Buckwheat—Very little grown here but where sown it looks well and has had ideal weather in which to ripen.

Millet—Not much raised here.

Sorghum—Not much raised but some small patches look fine.

Timothy—Was a good crop and was secured in fine condition.

Clover—Was good and went into stack in first-class shape.

Prairie Hay—None in the county to speak of.

Other Grains and Grasses—Slough or bottom land hay was good and was put up in good order.

Potatoes—Are yielding fine and are of large size and fine quality.

Vegetables—About an average crop and are being gathered in fine shape.

Apples—Are a very good crop; some new orchards making a fine yield; mostly fall fruit.

Other Fruits—Not much other fruit raised here.

Cattle—Cattle are in good condition but seem to be scarce and southern buyers are picking up all the larger cattle.

Horses—Scarce and high.

Swine—Crops of young pigs reported to be very short, many not having doubled their original number.

Sheep—Very few raised but small flocks look fine.

Poultry—About the usual number of poultry was raised.

Bees—Were doing fine the first of the season but the dry weather in August cut the honey season short and but few have filled their supers.

Drainage—Quite a large amount of drainage is being done; several large drainage districts have been formed.

Lands—Not much land changing hands; prices range from $40 to $100 per acre with many desirable farms being offered for $65 per acre.

Report of Fair—Held September 27-29 inclusive. We had a good attendance and a very good showing in most departments. The showing of fruit, grain and vegetables was the best for years.

WRIGHT.

CHAS. ROTZLER, CLARION, SEPTEMBER 27, 1909.

General Condition of Crops and Season—Very uneven as hail and excessive rains have done great damage.

Corn—Averages about 25 bushels per acre.

Oats—Averages from 20 to 23 bushels per acre.

Wheat—Not any.

Rye—Not any.

Barley—Fair.

Flax—Not any.

Buckwheat—Not any.

Millet—Not any.

Sorghum—Not any.

Timothy—Fair.

Clover—Fair.

Prairie Hay—Good.

Potatoes—Fair.

Vegetables—Good.

Apples—Poor.

Other Fruits—Poor.

Cattle—Good.

Horses—Good.

Swine—Good; losing a great many small pigs.

Sheep—Good.

Poultry—Good with the exception of turkeys.

Bees—Fair.

Drainage—Making great progress.

Other Industries—Not enough to be able to make a report on same.

Lands—Need more drainage.

Report of Fair—Held September 7-9th inclusive. Was a good fair and fairly well attended.

1910 FINANCIAL STATEMENTS OF COUNTY DISTRICT

Number	County or District	Balance on hand	Receipts		
			Miscellaneous receipts	State Appropriation	Total
1	Adair		$ 2,163.45	$ 208.00	$ 2,371.45
2	Adams	$ 312.30	3,055.55	219.55	3,587.40
3	Allamakee	.39	2,075.20	186.40	2,261.99
4	Audubon		3,966.55	243.92	4,210.47
5	Benton	300.00	2,152.01	218.62	2,670.63
6	Black Hawk, La Porte City Dist.	62.58	1,952.90	193.00	2,208.48
7	Bremer		9,417.79	236.89	9,654.68
8	Boone (Ogden)	289.13	1,699.50	208.83	2,197.46
9	**Boone Fair Association (Boone)**		6,876.60	201.40	7,078.00
10	Buchanan	16.02	2,756.15	206.46	2,978.63
11	Buena Vista		5,630.01	267.67	5,897.68
12	Butler	8.83	2,474.45	217.40	2,700.68
13	Calhoun	163.72	2,587.40	235.17	2,986.29
14	Calhoun (Rockwell City)		4,790.40	136.00	4,926.40
15	Cass	626.89	7,625.90	299.07	8,551.86
16	**Cass (Massena Dist.)**	574.46	2,381.20	200.00	3,155.66
17	Cedar		6,964.95	262.50	7,227.45
18	Cerro Gordo		11,610.97	300.00	11,910.97
19	Chickasaw (Nashua)	1,439.77	2,854.70	235.37	4,529.84
20	Chickasaw (New Hampton)	115.30	1,363.40	158.50	1,637.20
21	Clayton (National)	5.19	1,817.45	219.42	2,042.06
22	**Clayton (Strawberry Point)**	75.04	2,361.74	204.80	2,640.98
23	Clayton (Elkader)		2;981.35	205.15	3,186.50
24	Clinton (De Witt)	928.19	6,048.32	260.50	7,237.01
26	Crawford	317.38	1,331.93	161.67	1,810.98
25	**Clinton (Clinton)**	91.51	5,275.35	284.20	5,651.06
27	Davis		4,931.29	245.00	5,176.29
28	Delaware	17.24	2,354.26	210.00	2,581.50
29	Emmet		1,276.00	209.57	1,485.57
30	**Fayette (West Union)**	1,031.86	3,541.85	228.45	4,802.16
31	Fayette	1.35	1,058.15	116.20	1,175.70
32	Franklin	47.01	3,958.08	246.36	4,251.45
33	**Grundy**	890.16	2,810.75	208.81	3,918.72
34	**Guthrie**		3,600.10	218.25	3,818.35
35	**Hancock**	12.50	1,771.25	204.22	1,987.97
36	**Hardin**	4.34	5,622.35	263.65	5,890.34
37	Harrison	245.51	783.00	184.80	1,213.31
38	**Henry (Mt. Pleasant)**	100.17	7,317.43	253.00	7,670.60
39	Henry (Winfield)	48.45	3,146.20	237.07	3,413.72
40	Humboldt		1,837.60	215.79	2,053.48
41	Iowa (Marengo)		2,350.77	197.88	2,548.65
42	Iowa (Victor)	16.87	2,061.10	187.02	2,264.90
43	Iowa (Williamsburg)	10.24	2,516.12	220.00	2,746.36
44	Jackson	164.50	3,665.00	230.31	4,050.81
45	Jasper	744.49	3,757.25	247.56	4,749.30
46	Johnson (Iowa City)		2,901.51	239.10	3,140.61
47	Jones (Monticello)	633.50	3,827.05	144.91	4,605.46
48	**Jones (Anamosa)**		4,474.59	211.23	4,685.82
49	Keokuk		2,950.00	210.60	3,160.60
50	Kossuth	61.82	5,287.95	271.30	5,621.07
51	Lee (Donnellson)	158.17	1,852.35	154.40	2,164.92
52	Lee (West Point)	63.67	3,000.08	149.14	3,212.89
53	Linn (Central City)		2,908.43	257.53	3,165.96
54	Linn (Marion)	22.88	4,944.77	234.85	5,202.50
55	Louisa		3,873.36	270.82	4,144.18
56	Lyon	1,867.69	7,054.40	249.43	9,171.52
57	Madison		1,929.63	232.96	2,162.59
58	Mahaska	189.29	2,166.15	228.00	2,583.44
59	Marion	43.42	2,595.30	207.01	2,845.73
60	**Marshall (Rhodes)**		1,046.90	216.43	1,263.33
61	Marshall (Marshalltown)	1,591.97	8,713.85	300.00	10,605.82
62	Mills		3,778.45	189.66	3,968.11
63	Monona		2,019.00	205.35	2,224.35
64	Monroe		4,210.03	190.88	4,400.91
65	**Muscatine (West Liberty)**	699.23	4,031.95	300.00	5,031.18
66	**Muscatine (Muscatine)**		3,045.10	212.42	3,257.52

FAIRS IN IOWA RECEIVING STATE AID 1910

Disbursements				Profits and Loss		Assets and Liabilities		
Miscellaneous expenses	Speed premiums	Other premiums	Total	Balance November 1, 1909	Overdraft	Value of property	Indebtedness	Number
$ 1,322.36	$ 643.75	$ 580.00	$ 2,546.11	------------	$ 174.66	$ 8,000.00	$ 1,423.89	1
1,245.88	1,459.35	695.54	3,400.77	$ 186.63	------------	10,000.00	------------	2
1,269.65	186.25	466.00	1,921.90	240.00	------------	4,000.00	------------	3
1,312.61	1,414.70	939.20	3,666.51	543.96	------------	7,000.00	1,000.00	4
1,146.45	748.50	692.25	2,587.20	83.43	------------	6,000.00	2,000.00	5
755.62	1,105.00	482.50	2,343.12	------------	134.64	3,000.00	300.00	6
8,139.53	588.00	868.90	9,596.43	58,25	------------	7,500.00	------------	7
1,104.90	455.30	588.30	2,149.50	47.96	------------	6,000.00	2,400.00	8
5,628.69	1,050.00	514.00	7,192.69	------------	114.69	10,000.00	1,500.00	9
2,236.83	1,247.50	576.17	4,060.50	------------	1,081.87	10,000.00	850.00	10
2,540.78	2,550.00	1,176.75	6,267.53	------------	369.85	15,000.00	400.00	11
1,759.72	280.00	674.00	2,713.72	------------	13.04	5,000.00	225.00	12
1,493.67	290.00	851.75	2,635.42	350.87	------------	6,000.00	1,000.00	13
2,691.77	1,894.63	340.00	4,926.40	------------	------------	12,000.00	2,649.18	14
4,418.92	1,675.00	1,514.89	7,608.81	943.05	------------	10,000.00	2,500.00	15
1,330.88	420.00	522.00	2,272.88	882.78	------------	3,000.00	------------	16
5,517.63	226.00	1,125.05	6,868.68	358.77	------------	8,000.00	1,500.00	17
5,981.94	2,565.00	1,990.86	10,537.80	1,373.17	------------	18,542.00	6,966.62	18
3,488.11	------------	853.75	4,341.86	187.98	------------	6,500.00	2,500.00	19
898.60	180.75	396.27	1,475.62	161.58	------------	5,000.00	1,100.00	20
1,518.76	227.45	694.25	2,440.46	------------	398.40	3,000.00	450.00	21
1,586.70	505.00	548.00	2,639.70	1.28	------------	4,500.00	1,000.00	22
2,288.00	839.50	551.50	3,679.00	------------	492.50	6,000.00	4,580.00	23
3,890.64	1,814.25	1,105.00	6,809.89	296.12	------------	5,000.00	600.00	24
2,005.29	1,710.00	1,342.00	5,057.29	593.77	------------	10,000.00	2,160.00	25
735.96	190.94	404.18	1,331.08	470.90	------------	9,000.00	------------	26
2,483.24	1,498.25	950.05	4,931.54	244.75	------------	10,000.00	600.00	27
1,630.00	100.00	600.00	2,330.00	251.50	------------	6,500.00	3,645.60	28
866.25	------------	595.75	1,462.00	23.57	------------	------------	------------	29
3,412.16	440.00	784.50	4,636.66	165.50	------------	12,000.00	------------	30
357.55	368.50	288.25	1,014.30	161.40	------------	1,900.00	1,300.00	31
1,928.82	886.00	908.75	3,723.57	727.88	------------	7,000.00	3,000.00	32
1,493.65	570.19	588.18	2,652.02	1,266.70	------------	4,000.00	------------	33
1,052.68	1,880.00	682.50	3,615.18	203.17	------------	9,000.00	1,200.00	34
750.80	860.00	522.10	2,132.90	------------	144.93	3,000.00	1,700.00	35
3,070.50	1,715.00	1,136.40	5,921.90	------------	31.56	12,000.00	------------	36
846.39	402.50	462.00	1,710.89	------------	497.58	20,000.00	500.00	37
3,276.95	2,425.00	1,030.00	6,731.95	958.65	------------	15,000.00	------------	38
1,250.56	1,265.00	870.75	3,383.31	45.41	------------	8,000.00	500.00	39
1,208.55	330.00	657.90	2,196.45	------------	142.97	3,000.00	220.00	40
1,057.51	910.00	494.70	2,462.21	85.44	------------	5,300.00	2,000.00	41
892.24	760.00	467.56	2,119.80	145.19	------------	3,000.00	850.00	42
1,909.94	------------	700.00	2,609.94	136.42	------------	5,000.00	2,500.00	43
1,660.00	1,885.00	803.10	4,348.10	------------	288.29	10,000.00	3,000.00	44
2,705.62	1,410.00	975.60	5,091.22	------------	341.92	16,000.00	1,300.00	45
2.473.53	1,245.00	891.00	4,609.53	------------	1,468.92	17,000.00	5,670.00	46
2,719.55	630.00	362.29	3,711.84	893.62	------------	4,000.00	------------	47
3,105.41	1,179.00	591.17	4,875.58	------------	189.76	10,000.00	2,100.00	48
1,167.20	1,025.00	606.00	2,798.20	302.40	------------	4,000.00	------------	49
2,532.74	1,400.00	1,213.00	5,145.74	475.33	------------	18,350.00	6,816.00	50
896.47	870.00	386.00	2,152.47	12.45	------------	2,000.00	------------	51
1,770.04	1,070.00	372.85	3,212.89	------------	------------	5,500.00	2,572.68	52
2,090.66	------------	1,075.30	3,165.96	------------	------------	5,000.00	2,325.00	53
2,259.55	1,780.00	848.58	4,888.13	314.37	------------	20,000.00	5,300.00	54
2,038.81	1,380.00	1,208.25	4,627.06	------------	482.88	7,000.00	3,230.00	55
4,252.61	2,082.20	994.35	7,329.16	1,812.36	------------	20,000.00	------------	56
570.05	880.00	863.15	2,313.20	------------	150.61	4,600.00	2,500.00	57
1,000.00	700.00	780.00	2,480.00	103.44	------------	6,000.00	200.00	58
1,430.16	485.00	570.10	2,485.26	360.47	------------	8,000.00	675.00	59
547.82	------------	664.30	1,212.12	51.21	------------	2,500.00	365.87	60
4,915.58	2,321.50	2,263.05	9,500.13	1,105.69	------------	17,500.00	------------	61
3,393.49	2,975.00	474.15	6,842.64	------------	2,874.53	10,000.00	------------	62
1,240.50	325.00	553.50	2,119.00	105.35	------------	12,600.00	3,000.00	63
1,049.79	2,050.00	477.20	3,576.90	824.01	------------	2,800.00	------------	64
1,616.69	1,070.00	1,630.00	4,316.69	714.49	------------	5,000.00	------------	65
1,201.15	1,217.50	624.25	3,045.90	211.62	------------	2,500.00	------------	66

1910 FINANCIAL STATEMENTS OF COUNTY DISTRICT

Number	County or District	Balance on hand	Receipts		
			Miscellaneous receipts	State Appropriation	Total
67	O'Brien (Sutherland)	232.01	2,495.86	224.72	2,952.59
68	O'Brien (Sheldon)	116.35	3,320.05	223.00	3,659.40
69	Page (Clarinda)	1,512.11	3,248.39	227.09	4,987.59
70	Page (Shenandoah)	236.21	11,166.81	245.60	11,648.62
71	Pocahontas	481.90	5,866.88	215.17	6,563.95
72	Pottawattamie	1,016.77	3,266.87	224.75	4,508.39
73	Poweshiek (Malcom)	73.74	2,755.20	200.57	3,029.51
74	Poweshiek (Grinnell)	435.26	3,305.49	230.44	3,971.19
75	Ringgold (Tingley)	300.00	809.40	241.40	1,350.80
76	Sac		5,489.80	203.93	5,693.73
77	Shelby		4,905.86	243.20	4,949.06
78	Sioux	153.86	1,424.60	175.44	1,753.90
79	Tama		3,550.69	226.34	3,777.03
80	Taylor	8.76	2,259.82	126.54	2,395.12
81	Van Buren		1,250.00	179.20	1,429.20
82	Wapello	54.58	2,293.84	226.18	2,574.60
83	Warren		3,421.19	231.98	3,653.17
84	Winnebago (Forest City)	54.71	860.55	80.22	995.48
85	Winnebago (Buffalo Center)	271.18	917.38	141.20	1,329.76
86	Winneshiek	151.88	3,752.50	212.11	4,116.49
87	Worth	46.83	1,527.40	208.36	1,782.59
88	Wright		2,401.25	202.44	2,606.69
	Total 1909	$ 19,139.18	$309,285.94	$ 19,060.33	$ 347,485.45
	For comparison with 1908 statement 90 fairs. (Figures of the Inter-State Fair at Sioux City deducted.)	$ 18,323.66	$298,753.14	$ 17,302.25	$ 334,179.05

FAIRS IN IOWA RECEIVING STATE AID—CONTINUED 1910

Disbursements				Profit and Loss		Assets and Liabilities		
Miscellaneous expenses	Speed premiums	Other premiums	Total	Balance November 1, [illegible]	Overdraft	Value of property	Indebtedness	Number
1,601.33	440.00	747.25	2,788.58	164.01		4,000.00	1,500.00	67
1,315.90	1,613.50	730.00	3,659.40			5,000.00		68
4,817.08		770.95	5,588.03		[illegible]	4,000.00		69
[illegible]	[illegible]	1,173.00	11,520.24	[illegible]		20,000.00	1,100.00	70
2,995.82	2,525.00	651.75	6,172.57	391.38		10,000.00	900.00	71
1,273.85	1,454.75	747.51	3,476.11	1,032.28		7,000.00		72
1,137.36	1,280.00	505.75	2,923.11	106.40		6,000.00		73
2,103.99	[illegible]	[illegible]	[illegible]		791.35	[illegible]	[illegible]	74
775.95		914.00	1,689.95		339.15			75
2,435.77	2,475.00	539.30	5,450.07	[illegible]		6,500.00		76
2,019.18	1,995.00	932.00	4,946.18	2.88		8,000.00		77
1,003.04	[illegible]	439.35	1,780.51		35.61	5,000.00	600.00	78
1,739.79	1,247.50	763.40	3,750.69	[illegible]		5,000.00	100.00	79
1,107.42	825.00	316.35	2,248.77	146.35		5,000.00		80
200.00	850.00	448.00	1,498.00		68.80	6,000.00	2,000.00	81
1,858.39	620.00	755.40	3,233.79		659.19	4,800.00	[illegible]	82
908.30	1,885.00	819.84	3,613.14	40.03		12,000.00		83
874.73	[illegible]	200.55	1,129.28		[illegible]	2,500.00	[illegible]	84
[illegible]	62.75	353.00	1,034.40	[illegible]		2,500.00	[illegible]	85
3,413.23		621.15	4,034.38	82.11		5,000.00		86
639.84	275.00	[illegible]	1,498.46	284.13		4,000.00	175.00	87
911.00	1,170.00	511.95	2,592.95	13.74		5,000.00	2,000.00	88
$182,238.47	$89,950.63	$65,788.26	$337,986.36	$21,521.03	$12,021.94	$669,392.00	$110,704.84	---
$171,735.20	$89,367.09	$62,654.76	$323,757.05	$22,213.58	$11,791.58	$619,722.59	$107,815.84	---

ADMISSION FEES CHARGED AT COUNTY AND DISTRICT FAIRS

County	Where Held	General admission to grounds	Admission to grand stand	Admission to quarter stretch	Does ticket admit to quarter stretch or grand stand
Adams	Corning	$ .25	$ .15	$ .15	no
Adair	Greenfield	.25	.10	.15	no
Allamakee	Waukon	.35	.10	.10	no
Appanoose	Centerville	.25	.15	.25	no
Audubon	Audubon	.25	.15	free	----
Benton	Vinton	.35	.15	free	----
Bremer	Waverly	.25	.15	free	----
Boone	Boone	.25	.15	.10	no
Boone	Ogden	.35	.10	.10	no
Buchanan	Independence	.35	.15	free	----
Buena Vista	Alta	.35	.15	free	----
Butler	Allison	.25	.10	free	----
Calhoun	Manson	.35	.15	free	----
Calhoun	Rockwell City	.35	.25	.25	yes
Cass	Atlantic	.35	.25	.25	no
Cass	Massena	.25	.15	.15	no
Cedar	Tipton	.25	.10	.10	no
Cerro Gordo	Mason City	.35	.25	.25	yes
Chickasaw	Nashua	.35	.10	free	----
Chickasaw	New Hampton	.25	.10	free	----
Clayton	Strawberry Point	.25*a*	.10	free	----
Clayton	National	.35	.15	free	----
Clayton	Elkader	.35	.15	free	----
Clinton	DeWitt	.35	.25	.25	yes
Clinton	Clinton	.35	.25	free	----
Crawford	Arion	.25	.15	.25	no
Davis	Bloomfield	.25	.10	.10	no
Delaware	Manchester	.35	.15	free	----
Emmet	*Estherville	--------	--------	--------	--------
Fayette	West Union	.25	.15	none	----
Fayette	Oelwein	.25	.25	free	----
Franklin	Hampton	.35	.25	free	----
Grundy	Grundy Center	.25	.15	free	----
Guthrie	Guthrie Center	.25	.25	free	----
Hancock	Britt	.35	.10	free	----
Harrison	Missouri Valley	.35	.15	.25*b*	----
Hardin	Eldora	.35	.15	.10	----
Henry	Winfield	.25	.15	.15	no
Henry	Mt. Pleasant	.25	.15	.15	yes
Humboldt	Humboldt	.35	.15	free	----
Iowa	Marengo	.25	.15	.25	no
Iowa	Williamsburg	.25	.25	.25	no
Iowa	Victor	.25	.25	.25	no
Jackson	Maquoketa	.35	.15	.25	no
Jasper	Newton	.25	.25	.25	yes
Jefferson	Fairfield	.25	.10	.10	no
Johnson	Iowa City	.35	.15	.15	no
Jones	Anamosa	.35	.15	.15	yes
Jones	Monticello	.35	.15	.15	yes
Keokuk	What Cheer	.25	.25	.25	yes
Kossuth	Algona	.35	.15	.10	no
Lee	Donnellson	.25	free	free	----
Lee	West Point	.25	.10	.10	no
Linn	Central City	.25	.15	free	----
Linn	Marion	.35	.15	free	----
Louisa	Columbus Junction	.25	.15	.15	yes
Lyon	Rock Rapids	.35	.15	.15	yes
Madison	Winterset	.35	.25	.25	no
Mahaska	New Sharon	.25	.25	.25	yes
Marion	Pella	.25	.25	.15	no
Marshall	Marshalltown	.25	.15	.15	yes
Marshall	Rhodes	.25	none	none	----
Mills	Malvern	.25	.25	.25	no
Mitchell	Osage	.25	.15	free	----
Monona	Onawa	.35	.25	.25	yes
Monroe	Albia	.25	.15	.10	no
Montgomery	Red Oak	.25	.15	.25	no

ADMISSION FEES CHARGED AT COUNTY AND DISTRICT FAIRS—CONTINUED

County	Where Held	General admission to grounds	Admission to grand stand	Admission to quarter stretch	Does one ticket admit to quarter stretch or grand stand
Muscatine	Wilton Junction	.35	.20	.15	no
Muscatine	West Liberty	.25	.15	.15	yes
O'Brien	Sutherland	.35	.15	free	----
O'Brien	Sheldon	.35	.25	free	----
Page	Clarinda	.25	.15	.25	no
Page	Shenandoah	.25	.15	.25	no
Pocahontas	Fonda	.35	.25	.25	yes
Pottawattamie	Avoca	.35	.15	.15	no
Poweshiek	Grinnell	.25	.25	.25	yes
Poweshiek	Malcolm	.25	.25	.25	yes
Sac	Sac City	.35 *c*	.15 *d*	.25	no
Shelby	Harlan	.35	.15	.15	no
Sioux	Orange City	.25	.25	free	----
Story	Nevada	.25	.15	.10	no
Tama	Toledo	.25	.15	.25	no
Taylor	Bedford	.25	.15	.25	no
Van Buren	Milton	.25	.10	.10	yes
Wapello	Eldon	.35 *c*	.10	.25	no
Warren	Indianola	.25	.25	.25	yes
Winnebago	Forest City	.25 *f*	.15 *g*	free	----
Winnebago	Buffalo Center	.35	.10	.10	yes
Winneshiek	Decorah	.35	.10	free	----
Worth	Northwood	.25	.20	free	----
Wright	Clarion	.50	.25	free	----

(*a*) Will charge 35c in 1910. (*b*) Good for entire fair.
*Street fair, no admission.
(*c*) Will charge 50c 1910. (*d*) Will charge 25c 1910. (*e*) Two days 25c, one day 35c. (*f*) Charged 50c in 1908. (*g*) Charged 25c in 1908.

PART XIII

Horse Breeding Industry in Iowa

List of State Certificates Issued from May 1, 1909 to May 1, 1910

Copy of laws govern state enrollment of Stallions

In presenting the list of owners and names of stallions for which state certificates have been issued from May 1, 1909, to May 1, 1910, we deem it highly important, as well as a duty, to point out what in our opinion is the deficiency in the Iowa stallion registration law.

Since the enactment of this law by the Thirty-first General Assembly similar laws have been enacted by many other states. Wisconsin, we believe, was the first state to enact a law requiring the issuance of a state certificate for all stallions offered for public service. Iowa next recognized the importance of such a law for the improvement of the horse breeding industry of the state, and following rapidly upon the heels of Wisconsin and Iowa laws similar action was taken in the states of Illinois, Minnesota, South Dakota, Nebraska, Kansas, Indiana, Idaho, Pennsylvnia, New Jersey, etc. The one good feature of the Iowa law, which we believe to be the correct principle, is that it does not recognize any other than pure bred stallions, while in most of the other states named certificates are issued to cross-bred, grades, and mongrels, as well as pure bred. However, the Iowa law is lamentably weak in four particulars, which should be remedied by the Thirty-fourth General Assembly:

First. The Iowa law does not require the examination of the stallion by a competent veterinarian before a state certificate is issued, as required in almost all other states. Under the present law the secretary of the department of agriculture must issue a state certificate, regardless of the condition of the stallion, if upon examination the certificate of registration issued by the stud book association in which such stallion has been registered is found to be correct. By reason of the rigid examination required in other states before state certificate is issued, and the barring of all animals from public service, regardless of breeding, showing signs of any infectious, contagious or transmissible disease or unsoundness, Iowa has become the dumping ground for a great many of these unsound stallions. The Iowa law should be so amended that the presence of any one of the following named diseases would disqualify a stallion or jack from public service: Cataract; amaurosis (glass eye); periodic opthalmia (moon blindness); laryngeal hemiplegia (roaring or whistling); pulmonary emphysema (heaves, broken wind); chorea (St. Vitus' dance, crampiness, shivering, string-halt); bone spavin; ringbone; navicular disease; bog spavin; curb, with curby formation of hock; glanders, farcy; maladie du coit; urethral glet; mange; melanosis.

Second. The law should provide for an annual renewal fee as a precaution against the misuse of the state certificate by unscrupulous parties and to enable the department of agriculture to keep the list of sallions active and up-to-date. This will be absolutely necessary if the amendment with reference to the soundness of the animal is passed. The renewal clause will bring about a more rigid enforcement of the law.

Third. Section four of the law, with reference to advertising for public service a stallion for which a state certificate has not been issued, should be so amended as to include all newspaper advertisements as well as hand bills or posters.

Fourth. The general provisions of the law should be so amended to include jacks as well as stallions.

If the law is amended to require the examination of stallions, a clause should be inserted providing for a maximum fee to be charged by the veterinarian making the examination, and a further provision that in the event of such enactment the examination shall include all stallions for which state certificates have been issued and are still being offered for public service within the state, said examination to be made before renewal is issued.

The law does not contemplate that the department of agriculture shall prosecute violations. Under the Iowa statutes defining the duties of county attorneys the prosecution for the violation of any state laws taking place in his county is made a part of his duties. As a rule, complaints made to the department come in the form of letters notifying us of some violation of the law but asking that their names be withheld from the party upon whom they have informed. While the department cannot undertake to prosecute persons violating the law (not being authorized to do so), they will gladly turn over to the proper official any evidence they may receive. When notice of a violation is received by the department the guilty party is furnished with a copy of the law, with a letter calling his attention in particular to the penalty section. There are many persons who will inform upon the owner of a stallion for not complying with the law and will not assist in collecting the proper evidence for a prosecution, but will condemn the department as not attending to its duties or the law as being useless. Such complaints are unworthy of notice and merely show plainly the character of the person making them.

Since the taking effect of the present law, July 4, 1906, to May 1, 1909, there were issued 5,329 certificates and 722 transfers. From May

1, 1909, to May 1, 1910, there were issued 1,020 certificates and 369 transfers, making a total of 6,349 certificates and 1,091 transfers to May 1, 1910.

Without the renewal feature of the law there is no way for the department to calculate the number of stallions in actual service, or what percentage of stallions being offered for public service are pure bred. When the law first went into effect there was a total of 6,079 stallions reported for assessment purpose. The first twelve months the law was in effect, from July 4, 1906, to July 4, 1907, there were issued 3,642 certificates, thus indicating that over fifty per cent of the stallions in use were pure bred. This is a much larger percentage of pure bred stallions in use than is reported in any other state. This is the natural result of the oft repeated statement that Iowa has more pure bred registered live stock than any other state.

Following is a table showing the number of certificates and transfers issued from May 1, 1909, to May 1, 1910, by breeds. This is followed by a county list giving the name of the owner and name and breed of the stallion for which certificates were issued during the above period.

Laws of Iowa Governing State Enrollment of Stallions Kept for Public Service, Sale, Exchange or Transfer, and Lien for Service Fee

STALLION LAW.

SECTION 2341. *Repeal.* That Chapter Ninety-eight (98), of the Acts of the Thirty-first General Assembly be, and the same is hereby repealed, and the following enacted in lieu thereof:

SEC. 2341-a. *Registration of Pedigree—Fee.* Any owner or keeper of any stallion, kept for public service, or any owner or keeper of any stallion kept for sale, exchange or transfer, who represents such animal to be pure bred, shall cause the same to be registered in some stud book recognized by the Department of Agriculture at Washington, D. C., for the registration of pedigrees, and obtain a certificate of registration of such animal. He shall then forward the same to the Secretary of the State Board of Agriculture of the State of Iowa, whose duty it shall be to examine and pass upon the correctness or genuineness of such certificate filed for enrollment. In making such examination, said secretary shall use as his standard the stud books recognized by the Department of Agriculture at Washington, D. C., and shall accept as pure bred any animal registered in any such stud books. And if such registration is found to be correct and genuine, he shall issue a certificate under the seal of the Department of Agriculture, which certificate shall set forth the name, sex, age and color of the animal, also the volume and page of the stud book in which said animal is registered. For each enrollment and certificate he shall receive the sum of one dollar, which shall accompany the certificate of registration when forwarded for enrollment.

SEC. 2341-b. *Posting certificate of registration.* Any owner or keeper of a stallion for public service, who represents or holds such animal as pure bred, shall place a copy of the certificate of the State Board of Agriculture on the door or stall of the stable where such animal is usually kept.

SEC. 2341-c. *Grade stallion.* Any owner or keeper of a stallion kept for public service, for which a State certificate has not been issued, must advertise said horse or horses by having printed hand bills, or posters, not less than five by seven inches in size, and said bills or posters must have printed thereon immediately preceding or above the name of the stallion, the words "grade stallion," in type not smaller than one inch in height, said bills or posters to be posted in a conspicuous manner at all places where the stallion or stallions are kept for public service.

*Sec. 2341-d. *Transfer of certificate—fee.* When the owner of any registered stallion shall sell, exchange or transfer same, he shall file said certificate, accompanying the same with a fee of fifty cents, with the secretary of the State Board of Agriculture, who shall upon receipt of the state certificate properly transferred and upon payment of the required fee, issue a new certificate to the then new owner of the animal. All fees provided by this act shall go into the treasury of the Department of Agriculture.

*Sec. 2341-e. *Publish or use pedigree fraudulently.* Any person who shall fraudulently represent any animal, horse, cattle, sheep or swine, to be pure bred, or any person [illegible] printed or published, any false pedigree or certificate, or shall use any stallion for public service, or sell, exchange, or transfer any stallion, representing such animal to be pure bred, without first having such animal registered, and obtaining the certificate of the State Board of Agriculture as hereinbefore provided, or who shall violate any of the provisions of this act, shall be guilty of a misdemeanor, and be punished by a fine of not more than one hundred dollars, or imprisoned in the county jail not exceeding thirty days, or by both such fine and imprisonment.

LIEN LAW FOR SERVICE FEE.

H. F. 126.

AN ACT providing that owners or keepers of stallions shall have a lien upon the progeny of any such animal for the service fee therefor.

Be it enacted by the General Assembly of the State of Iowa:

Section 1. The owner or keeper of a stallion kept for public services who has complied with sections twenty-three hundred and forty-one-a (2341-a), twenty-three hundred and forty-one-b (2341-b), twenty-three hundred and forty-one-c (2341-c), and twenty-three hundred and forty-one-d (2341-d), of the Supplement to the Code, 1907, shall have a prior lien upon the progeny of such stallion to secure the amount due such owner or keeper for the service of such stallion, resulting in said progeny, provided, that where such owner or keeper misrepresents such stallion by false pedigree no lien shall be obtained.

Sec. 2. The lien herein provided for shall remain in force for a period of six months from the birth of said progeny and shall not be enforced thereafter.

Sec. 3. The owner or keeper of such stallion may enforce the lien herein provided by placing in the hands of any constable an affidavit containing a description of the stallion and a description of the dam and the time and terms of service, and said constable shall thereupon take possession of said progeny and sell the same for non-payment of service fee by giving the owner of said progeny ten (10) days written notice, which notice shall contain a copy of the affidavit and a full description of the progeny to be sold, the time and hour when, and the place at which the sale will take place, and posting for the same length of time in three public places in the township of such owner's residence a copy of such notice. If payment of the service fees and costs are not made before the date thus fixed, the constable may sell at public auction to the highest bidder such progeny and the owner or keeper of the stallion may be a bidder at such sale. The constable shall apply the proceeds, first, in the payment of the costs, second, in the payment of the service fee. Any surplus arising from sale shall be returned to the owner of the progeny.

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*As re-enacted by the Thirty-third General Assembly.

SEC. 4. The right of the owner or keeper to foreclose, as well as the amount claimed to be due, may be contested by any one interested in so doing, and the proceedings may be transferred to the district court, for which purpose an injunction may issue, if necessary.

Approved April 8, A. D. 1909.

STUD BOOKS

Recognized by the

U. S. Department of Agriculture

HORSES

AMERICAN BOOKS OF RECORD.

American Trotter.	American Trotting Register.	American Trotting Register Association, Wm. H. Knight, secretary, 355 Dearborn street, Chicago, Ill.
Arabian -------	Studbook of the Arabian Horse Club of America.	Arabian Horse Club of America, H. K. Bush-Brown, secretary, Newburg, N. Y.
Belgian Draft--	American Register of Belgian Draft Horses.	American Association of Importers and Breeders of Belgian Draft Horses, J. D. Conner, Jr., secretary, Wabash, Ind.
Cleveland Bay	American Cleveland Bay Studbook ------	Cleveland Bay Society of America, R. P. Stericker, Secretary, 80 Chestnut avenue, West Orange, N. J.
Clydesdale ----	American Clydesdale Studbook.	American Clydesdale Association, R. B. Ogilvie, secretary, Union Stock Yards, Chicago, Ill.
French Coach-	French Coach Horse Register.	French Coach Horse Registry Company, Charles C. Glenn, secretary, Columbus, Ohio.
French Coach-	French Coach Studbook-	French Coach Horse Society of America, Duncan E. Willett, secretary, Maple avenue and Harrison st., Oak Park, Ill.
French Draft--	National Register of French Draft Horses.	National French Draft Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
German Coach-	German, Hanoverian, and Oldenburg Coach Horse Studbook.*	German, Hanoverian, and Oldenburg Coach Horse Association of America, J. Crouch, secretary, Lafayette, Ind.
Hackney ----	American Hackney Studbook.	American Hackney Horse Society, Gurney C. Gue, secretary, 308 West 97th street, New York, N. Y.
Morgan ----	American Morgan Register.	American Morgan Register Association, H. T. Cutts, secretary, Middlebury, Vt.
Percheron ---	Percheron Studbook of America.†	Percheron Society of America, Wayne Dinsmore, secretary, Union Stock Yards, Chicago, Ill.
Percheron -----	Percheron Register-------	The Percheron Registry Company, Chas. C. Glenn, secretary, Columbus, Ohio.
Percheron -----	The American Breeders' and Importers' Percheron Register.	The American Breeders' and Importers' Percheron Registry Company, John A. Forney, secretary, Plainfield, Ohio.
Saddle Horse--	American Saddle Horse Register.	American Saddle Horse Breeders' Association, I. B. Nall, sec., Louisville, Ky.
Shetland Pony	American Shetland Pony Club Studbook.	American Shetland Pony Club, Julia M. Wade, secretary, Lafayette, Ind.
Shire --------	American Shire Horse Studbook.	American Shire Horse Association, Charles Burgess, secretary, Wenona, Il.
Suffolk --------	American Suffolk Horse Studbook.	American Suffolk Horse Association, Alex. Galbraith, secretary, DeKalb, Ill.
Thoroughbred-	American Studbook------	The Jockey Club, James E. Wheeler, registrar, 571 Fifth Avenue, New York, N. Y.
Welch Ponies and Cobs-----	Welch Pony and Cob Studbook.	Welch Pony and Cob Society of America, John Alexander, secretary, Aurora, Ill.

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*Absorbed interests of the Oldenburg Coach Horse Register, C. E. Stubbs, secretary Fairfield, Iowa.

†Absorbed interests of the American Percheron Horse Breeders' Association May, 9, 1904, whose certificates issued prior to that date only, signed by S. D. Thompson as secretary willbe recognized.

NUMBER AND CHARACTER OF CERTIFICATES ISSUED

May 1, 1909, to May 1, 1910

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenburg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Adair	1	2									8			4			15
Adams	1	1		1		1					11			1			16
Allamakee	3	1		1		1					5			1			12
Appanoose		1		3	1												5
Audubon		1		3		1											5
Benton		2									2			[illegible]			9
Black Hawk	2	6		1		1			1		12			7			30
Boone	1	15		2				1			3			2			24
Bremer	1	1									6						8
Buchanan	1	3				2					4						10
Buena Vista	3			2					1		3			2			11
Butler	4	1									2			1			8
Calhoun						1				1	5						7
Carroll		1				1					6			1			9
Cass	3	1		4							2			3			13
Cedar	3	1				1					5						10
Cerro Gordo											2			1			3
Cherokee	1										2						3
Chickasaw	1	4		4							2						11
Clarke	2	5		1		1					10			1			20
Clay		1		1							10						12
Clayton		5									6			1			12
Clinton		3				3					3			1			10
Crawford	1	3				1					6						11
Dallas	2	3			1				1		5			3			15
Davis	1										4						5
Decatur		1				2			1		3			3			10
Delaware	3	86		2	2	1	5	7			101			7			217
Des Moines	4										2	1					7
Dickinson	2										4						6
Dubuque	2	3									2			1			8
Emmet						2					4			1			7
Fayette	3	2		2	1	1					7			2			18
Floyd	1					1					3						5
Franklin	4								1		2						7
Fremont											2			1			3
Greene	2	3		2							11						18
Grundy	1	1		1		1					6	1					11
Guthrie	1	2			1						4						8
Hamilton	1	2		1		2											6
Hancock		3			1	2					3						9
Hardin	2										8						10
Harrison	2	2				1					4						9
Henry	9	1			2						10			1			23
Howard		1		3							2						6
Humboldt		2				2					4						8
Ida	1	1		1							1						4
Iowa	1	5		4							7						17
Jackson	3	4		1		2					1	1					12
Jasper	4	2		1							7	3					17
Jefferson				1		4					8	1					14
Johnson				1							4			2			7
Jones	2			1		2					1			4			10
Keokuk	2	4		1		2		1			11			7			28
Kossuth	2	1		1							8			1			13
Lee	5					3					7			1			16
Linn	1	3		1		1	1	1			12			2			22
Louisa	1	1									6			3			11
Lucas		2		2		1					1						6
Lyon											1						1
Madison						3					4			2			9
Mahaska	5	1				4					20	1					31
Marion	2	2		1							7			1			13
Marshall	2	1		1		1	1				3						9
Mills											1						1
Mitchell	2	3		1							1						7

NUMBER AND CHARACTER OF CERTIFICATES—CONTINUED

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenburg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Monona											8						8
Monroe																	
Montgomery	2						1				5			2			10
Muscatine	1					1					6			1			9
O'Brien	2			2		1				1	9			2			17
Osceola						2					1						3
Page	1	1		1		1					8	1		2			15
Palo Alto											6						6
Plymouth											2						2
Pocahontas	2					1					2						5
Polk	5	3									10			2			20
Pottawattamie	3	1		1	1		1				5			3			15
Poweshiek	3	1		1							7			1			13
Ringgold	2			1	1						6			2			12
Sac	2	1		1							5			1			10
Scott	1										1						2
Shelby		1									2			1			4
Sioux	1	2									3						6
Story	5					3					11			1			20
Tama	2			4	1	1					3			1			12
Taylor	2	5		3		4					14			3			31
Union		4				5			1		19			6	1		36
Van Buren		1				1					8						10
Wapello		1		1							3						5
Warren	4	5		1		2					10			3			25
Washington	5					1					7			1			14
Wayne						1			2		1						4
Webster	1			1		1					1						4
Winnebago											3						3
Winneshiek	2	4		1							1						8
Woodbury	4	2									4			2	1		13
Worth								1	1		4						6
Wright	2	1		1							5						9
Horses owned in neighboring states	1	4									4						9
Total	157	237		71	12	78	9	11	9	2	604	9		103	2		1304

DIRECTORY OF OWNERS OF PURE BRED STALLIONS BY COUNTIES

Certificates Issued From May 1, 1909, to May 1, 1910

ADAIR COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5639	John McDermott	Bridgewater	McEller 8413	Shire
2850	John McDermott	Bridgewater	Jouteur 29567 (45690)	Percheron
5640	Fred R. Brown	Greenfield	Marcher 59438	Percheron
5735	D. J. Hepler	Greenfield	Lee Prince 10142	Shire
1286	Earl Bloom	Bridgewater	Top Shot 7718	Shire
1605	J. E. Holliday	Greenfield	Stuntney Airlie 9022 (22965)	Shire
6042	John McDermott	Bridgewater	Houzeau 63519 (74391)	Percheron
6043	John McDermott	Bridgewater	Togo 45442	Percheron
1276	A. J. M. Johnson	Greenfield	Jerrierais 31111 (43734)	Percheron
6154	G. C. Thomas	Hebron	Olbert June 63014	Percheron
4052	W. F. Sachan	Adair	Pagoda 50276	Percheron
6208	Edw. Tracy	Fontanelle	Colas 4798 (58548)	Belgian
6209	Kissinger & Johnson	Greenfield	Marius de Sauveniere 4796 (51918)	Belgian
6225	H. A. Alcorn	Adair	Missouri Boy 47640	Trotter
6272	John McDermott	Bridgewater	Haquet 68438 (77576)	Percheron

ADAMS COUNTY.

4047	Burgess Allen	Prescott	Black Jack 48069	Percheron
5379	J. N. B. Miller	Prescott	H. W. Grady 14822	Trotter
5772	L. C. Reese	Prescott	Bentley Boy 23335	Percheron
5929	L. E. Weaver	Nodaway	Blucher 19534	French Draft
5977	L. D. Bishop	Brooks	Laurietin 64388 (58036)	Percheron
6019	Laban Harrison & Son	Prescott	Supreme 39804 (14194)	Belgian
6020	Laban Harrison & Son	Prescott	King's Florist 14559	Clydesdale
6023	Laban Harrison & Son	Prescott	Kidsnape 10959 (26934)	Shire
6230	E. L. Humbert	Corning	Galoubert 65638 (72299)	Percheron
6231	E. L. Humbert	Corning	Argand 65641 (66078)	Percheron
6232	E. L. Humbert	Corning	Heteroclite 65649 (75959)	Percheron
6233	E. L. Humbert	Corning	President 65639 (65149)	Percheron
6234	E. L. Humbert	Corning	Harpiste 65651 (74938)	Percheron
6235	E. L. Humbert	Corning	Geant 65643 (79760)	Percheron
6236	E. L. Humbert	Corning	Yangleur 65642 (66599)	Percheron
4283	J. M. Stevens	Prescott	Mokrani 29835	Percheron

ALLAMAKEE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5386	M. T. Jacobson	Waterville	Jerome 49170	Percheron
5387	M. T. Jacobson	Waterville	Dr. Duke 49168	Percheron
5439	Henry Eldridge	Waukon	Cory Kilvert 43217	Trotter
5700	W. M. Thompson	New Albin	Blossom's Pride 13015	Clydesdale
5795	Zoll & Byrnes	Waukon	Imagier 64980 (79464)	Percheron
6238	P. J. Beucher	Postville	Ned Agan 38545	Trotter
648	J. J. Roche	Harper's Ferry	Royal Emblem 43208	Trotter
6307	Henry Lang	Lansing	Reuil Wayne 17928	French Draft
3137	Gust. Olson	Postville	Vigoureux 27127 (46915)	Percheron
6322	Hirth, Wendel & Frahm	Church	Hispano 64827 (76028)	Percheron
6333	Thos. Gordon	Postville	Zimri 11489 (21056)	Shire
4317	Wagner, Moreton & Gericke	Postville	Leon d' Or (27502)	Belgian

APPANOOSE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6008	M. McCrory	Moravia	Bob Lincoln 14779	Clydesdale
6195	J. E. Hancock	Moravia	Master Fearless II 15121	Clydesdale
6216	Eli Smith, Sr.	Unionville	Clumber Grey 10423 (26059)	Clydesdale
6262	J. C. Stevenson	Cincinnati	Robert de Bender 3382 (42270)	Belgian
6264	J. C. Stevenson	Cincinnati	Bismark 4065	French Coach

AUDUBON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5478	J. C. Hardman & Son	Brayton	Gay Lad 13761	Clydesdale
6062	Les Berger	Audubon	Yukon 18797	French Draft
6189	W. W. Weston	Audubon	Prince Scotstown 12207	Clydesdale
6190	W. W. Weston	Audubon	Sylvan Baron 13858 (14514)	Clydesdale
5348	S. L. Mantz	Audubon	Gaston de Bossierre 3250 (43686)	Belgian

BENTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
717	M. F. Tracy	Shellsburg	John Hale 32933	Trotter
5418	R. Pickart	Norway	Hernez 42397 (73632)	Percheron
5566	Fred Kieffer	Vinton	Ronald Crews 6687	Trotter
839	J. S. VanFossen	Shellsburg	St. Blaze 11642	French Draft
5926	W. F. A. Rabe	Keystone	Norfolk 4494 (Vol. 16)	Belgian
6040	Richard Pickart	Norway	Charmant de Mellemont 4689 (45918)	Belgian
5354	M. D. Dodd	Belle Plaine	Don Aegon 45515	Trotter
5355	L. H. Liebsch	Vinton	Walker 46104	Percheron
1172	F. C. Bobzien	Newhall	Beach Insurgent 6554 Vol. 20)	Shire

BLACK HAWK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5712	Wm. Crownover	Hudson	Hascen 61587 (75692)	Percheron
5715	Wm. Crownover	Hudson	Huns 61594 (76086)	Percheron
5716	Wm. Crownover	Hudson	Hydroscope 61591 (73985)	Percheron
5719	Wm. Crownover	Hudson	Patriote 61591 (61840)	Percheron
5720	Wm. Crownover	Hudson	Neron de Hornu 3985 (Vol. 16)	Belgian
5721	Wm. Crownover	Hudson	Saturne 3986 (Vol. 16)	Belgian
5722	Wm. Crownover	Hudson	Futur de Bur 3983 (49342)	Belgian
5723	Wm. Crownover	Hudson	Max de Deynze 3984 (52182)	Belgian

BLACK HAWK COTNTY—CONTINNED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5724	Wm. Crownover	Hudson	Congolais 3982 (Vol. 16)	
5725	Wm. Crownover	Hudson	Loughton Squire 10629 (26896)	Belgian Shire
5726	Wm. Crownover	Hudson	Southill Precentor 10625 (26900)	Shire
5727	Wm. Crownover	Hudson	Drayman's King 10623 (24198))	Shire
5728	Wm. Crownover	Hudson	Diplomacy 10624 [illegible]	Shire
5729	Wm. Crownover	Hudson	Desford Ceour-de-Lion 10627 (26119)	Belgian
5730	Wm. Crownover	Hudson	Paramount Tom 10950	Shire
5790	James Loonan	Waterloo	Marquis 65789	Percheron
5791	James Loonan	Waterloo	Eric 53799	Percheron
5792	James Loonan	Waterloo	Frank J. 65817	Percheron
5793	T. F. Glenny	Hudson	Sir Guibert 61073	Percheron
5830	Haring Bros.	LaPorte City	Johnline 38591	Trotter
5831	Haring Bros.	LaPorte City	Dreadnaught V. 9634 (24858)	Shire
5832	Haring Bros.	LaPorte City	Agenor 52267 (58782)	Percheron
5833	Sam Gillen	Hudson	Yeoman Ben 9536 (24850)	Shire
5713	D. W. & H. E. McDougal	Waterloo	Gilolo 61590 (79395)	Percheron
774	Chas. Hammer	Washburn	Tommy Brown 428	Morgan
3415	Bernard Illion	Finchford	Gold Crown 10035	Clydesdale
5212	Arthur Rugg	Cedar Falls	Journaliste 55462 (67192)	Percheron
2474	Arthur Rugg	Cedar Falls	Duncan 25581	Percheron
3329	Arthur Rugg	Cedar Falls	Red Rob 41135	Trotter
977	Twaites Bros.	Hudson	Taupin 10704	French Draft

BOONE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4612	M. W. Grigsby & Son	Madrid	Dewstow Pioneer 9831 (20428)	Shire
678	Newton A. Phipps	Mineral Ridge	Villebon II 40668	Percheron
5066	Geo. O. Durrell	Pilot Mound	Glerin 59239 (70508)	Percheron
5804	G. W. Grigsby	Madrid	Bon Espoir de Solre 4072 (31720)	Belgian
5893	Neild & Schell	Ogden	Young Sir David 13692 (14432)	Clydesdale
5894	Neild & Schell	Ogden	Baron Kerr 13691 (13992)	Clydesdale
5934	A. M. VanSteenberge	Ogden	Edouard 4637 (Vol. 16)	Belgian
5935	A. M. VanSteenberge	Ogden	Castor de Petit Roeulx 4636 (45776)	Belgian
5936	A. M. VanSteenberge	Ogden	Bismark de Vedrin 4634 (51798)	Belgian
5937	A. M. VanSteenberge	Ogden	Brissac de Ghorain 4633 (Vol. 16)	Belgian
5938	A. M. VanSteenberge	Ogden	Napoleon de Bierghes 4646 (51844)	Belgian
5939	A. M. VanSteenberge	Ogden	Major de Petit 4645 (Vol. 16)	Belgian
5940	A. M. VanSteenberge	Ogden	Gaulois de Thuillies 4639 (51822)	Belgian
5041	A. M. VanSteenberge	Ogden	Forton de Vedrin 4640 (51976)	Belgian
5942	A. M. VanSteenberge	Ogden	Forton 4638 (Vol. 16)	Belgian
5943	A. M. VanSteenberge	Ogden	Mairet 4644 (47310)	Belgian
5944	A. M. VanSteenberge	Ogden	Gugusse D' Emines 4641	Belgian

BOONE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
			(51800)	
5945	A. M. VanSteenberge	Ogden	Honore de Thuillies 4642 (Vol. 16)	Belgian
5946	A. M. VanSteenberge	Ogden	Louis de la Vante 4643 (Vol. 16.)	Belgian
5947	A. M. VanSteenberge		Tambour 4647 (50076)	Belgian
5427	H. W. Conover	Boone	Orphan Boy 56667	Percheron
6067	Neild & Schell	Beaver	Imp. Wilson Mathias 1335 (10520)	Hackney
6150	H. Osterhoudt	Boone	Postland Improver 10791 (25538)	Shire
6249	S. P. Emmel	Boone	Patronwoood 47650	Trotter

BREMER COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4489	Claude McConkey	Sumner	Mark Del 24914	Trotter
927	J. H. Carstensen	Tripoli	Bordeaux (57967)	Percheron
2596	F. H. Baskins	Janesville	LeMont 42155	Percheron
5718	Fred Kurt	Denver	Saskin 61589 (67902)	Percheron
6164	W. H. Tegtmeier	Tripoli	LeBon 21525	Percheron
6221	E. M. Reeves	Waverly	Max 59528	Percheron
1178	F. T. Schweer	Dunkerton	Bon Courage 42879 (57093)	Percheron
5560	Wm. Schoenbeck	Tripoli	Pourquoi 4209 (Vol. 17)	Belgian

BUCHANAN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5415	Joseph Masteller	Jesup	Cognac d' Ouffet 1723 (22974)	Belgian
5414	Joseph Masteller	Jesup	Allerdyce 17314	Percheron
5799	Jay R. Laird	Jesup	Bright Star 55684	Percheron
5800	Jay R. Laird	Jesup	Roscoe 55685	Percheron
5837	George Guy	Lamont	Mouton Lalaing 4039 (Vol. 17)	Belgian
5902	Otis Jones	Lamont	Perfection 14242	French Draft
6122	D. Lowell	Jesup	Gray Boy 16747	French Draft
6137	Irving H. Child	Lamont	Humbert 53046 (73537)	Percheron
4693	Klotz & Hekel	Quasqueton	Fiston de Lillois 3415 (39136)	Belgian
6251	Elmer Ohl	Jesup	Stevenson 45964	Trotter

BUENA VISTA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5394	Merrit N. Hoffman	Storm Lake	Philo-Cub 5271	Morgan
5397	Earl Walrod	Storm Lake	Brilliant Arion 44493	Trotter
5773	F. N. Buckingham	Alta	Roxburgh Choice 14750	Clydesdale
2037	Henry D. Thiemann	Newell	Duke XII 5934 (18689)	Shire
4205	Frank Viers	Storm Lake	Silent M. 31415	Trotter
6013	Jacob Jacobson	Alta	Prince Charlie 21527	Percheron
3	Will F. Miller	Storm Lake	McCaskle 6820	Clydesdale
6280	George Oltmans	Scotch Grove	Esko Boy 47722	Trotter
6283	T. J. Cavanaugh	Alta	Frazer 56426	Percheron
2692	John A. Swanson	Albert City	Gabels Coeur-de-Lion 6961 (Vol. 25)	Shire
1252	John Christensen	Newell	Dewette 26885	Percheron

BUTLER COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5426	W. J. Harman	New Hartford	Robbie Ward 47373	Trotter
5474	John Bode	Kesley	Mc Gregor Grattan 39129	Trotter
5783	F. J. Gletty	Parkersburg	J. B. Rex 9003	Trotter
5892	Deardorf & Mullen	Greene	Dukeling Tom 10231 (26147)	Shire
274	Ira Ingraham	Greene	Sampson 31414	Percheron
5993	E. C. Enloe	New Hartford	Early Cash 50402	Trotter
5452	Louis Pagel	Allison	Major de Maulde 3887 (52146)	Belgian
5162	John Bode	Kesley	Valegrin 42722 (53899)	Percheron

CALHOUN COUNTY.

160	Pomery Horse Co	Manson	Monaco 26908	Percheron
1503	Robt. Williams	Manson	Fred Douglas 17468	Percheron
6120	V. R. Fleenor	Manson	Abe [illegible]	Percheron
6121	V. R. Fleenor	Manson	Black Hawk 17753	French Draft
6161	Wm. T. Butson	Pomeroy	Maboule 42183 (56223)	Percheron
4711	Chas. Spenla	Lohrville	Galmard 56878 (69676)	Percheron
3855	W. C. Abney	Yetter	Oki (Vol. 7)	Oldenburg Coach

CARROLL COUNTY.

5376	C. Steffes	Templeton	Serpentin 42424 (69063)	Percheron
4328	Chris Meyers	Dedham	Cheque 53353 (67637)	Percheron
5829	Pasco Bros.	Carroll	Hohisse 57582 (72579)	Percheron
5992	E. M. Blackly	Ralston	Saxon's Sort [illegible]	Shire
6025	Keat & Sanders	Manning	Major de Hoves 4694 (14542)	Belgian
6061	John Grossman	Carroll	Gigoureux 64362 (72653)	Percheron
6125	Frank Venteicher	Carroll	Giorno 64378 (72477)	Percheron
1675	T. M. Campbell	Coon Rapids	Dewey 10974	French Draft
2056	Keat & Sanders	Manning	Echo 41710 (63190)	Percheron

CASS COUNTY.

1062	E. G. Allanson	Anita	Pat King 35906	Trotter
1781	A. E. Morton	Griswold	Joe Bailey 8003	Shire
5504	J. C. Kennedy	Atlantic	Gaillac 55368 (69319)	Percheron
5741	Alfred Bailey	Anita	Royaliste 13417	Clydesdale
5740	E. G. Allanson	Anita	Claymore 13918	Clydesdale
3499	M. P. & D. C. Bickett	Anita	Cap Vincent 9065	Shire
1213	Wm. Petit	Anita	Laird of Anita 12157	Clydesdale
5443	S. G. Jewett	Anita	Debonair 12976	Clydesdale
5976	Geo. Smith	Atlantic	Urgent 64854 (66338)	Percheron
6073	J. Colwell	Atlantic	Appolis 46928	Trotter
394	Ernest Maas	Massena	Honest Jerry 6374	Shire
6239	W. B. Whisler	Wiota	Strecker 0953	Trotter
6331	J. P. McDermott	Wiota	Robuste de Thalie 4777 48738)	Belgian

CEDAR COUNTY.

5431	Davidson & Jackson	Mechanicsville	Sinclair the First 38671	Trotter
5448	L. P. Hanson	West Branch	Prince 2945	Belgian
5825	A. J. Glick	Clarence	Glick's Auctioneer Jr. 53443	Percheron

CEDAR COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5626	A. J. Glick	Clarence	Wm. H. Taft 57089	Percheron
3133	Fischer & Helmer	Mechanicsville	George Arthur 15704	French Draft
6045	W. H. Baker	Mechanicsville	Star Clipper 50752	Trotter
6228	G. A. Milnes	Springdale	Hamel 67749 (73492)	Percheron
6229	G. A. Milnes	Springdale	Vermouth 67747 (66682)	Percheron
387	John Secor	Mechanicsville	Red Reaper 39280	Trotter
4331	A. Glick & Son	Clarence	Matelot 51665 (51468)	Percheron

CERRO GORDO COUNTY.

5702	Wm. Andres	Rock Falls	LeRoy 54928	Percheron
1580	Loyd & Keeler	Mason City	Abe Lincoln 8400	Shire
2415	J. F. Stott	Mason City	Peer 40418	Percheron

CHEROKEE COUNTY.

4131	Elmer Hansen	Marcus	Almond 25317	Percheron
5951	F. F. Lowell	Larrabee	Boyd M. 38547	Trotter
2963	J.H. Montgomery	Larrabee	Malmaison 41864	Percheron

CHICKASAW COUNTY.

5705	Frank P. Shekleton	Lawler	Exchecquer 14493	Clydesdale
5706	Frank P. Shekleton	Lawler	Westward Ho 14495 (14886)	Clydesdale
5707	Frank P. Shekleton	Lawler	Goldrock 14494 (14150)	Clydesdale
1474	John Tietjen	Alta Vista	Paul Mas (27498)	Belgian
5602	M. B. Farr	Nashua	Haride 52698 (76850)	Percheron
5451	M. B. Farr	Nashua	Bibelot 3882 (52144)	Belgian
5661	B. L. Brown	Nashua	Matador 4340 (52347)	Belgian
6146	J. T. Huffman	Ionia	Heridat 64282 (75719)	Percheron
2200	J. L. Curtis	New Hampton	Cambrinus de Lierde 2589 (34388)	Belgian
6258	T. H. Smith	Lawler	Young Conet 12996	Clydesdale
1837	G. M. Smith	New Hampton	Silver Royal 43539	Trotter

CLARKE COUNTY.

5340	A. M. Kelley	Osceola	Artemus 57702	Percheron
5441	McComas Horse Co.	Osceola	Gugusse d' Hyon 3652 (Vol. 15)	Belgian
5615	Hart Bros.	Osceola	Boston 4173 (52322)	Belgian
5616	Hart Bros.	Osceola	Rideau 52572 (67194)	Percheron
5617	Hart Bros.	Osceola	Paladin 52573 (63040)	Percheron
5038	Hart Bros.	Osceola	Crip 3379 (46634)	Belgian
5710	P. W. Sinnott	Osceola	Hambard 42837 (76252)	Percheron
5780	Hart Bros.	Osceola	Turntree Snipe 10738 (25724)	Shire
3175	E. G. Paul	Osceola	French Lad 15717	French Draft
4105	R. B. Bartlett	Hopeville	Kimberley 13176	Clydesdale
5997	R. B. Bartlett	Hopeville	Hamelet 57872 (73516)	Percheron
5844	Hart Bros.	Osceola	Huhues 52566 (74848)	Percheron
5845	Hart Bros.	Osceola	Hiver 52570(74012)	Percheron
5846	Hart Bros.	Osceola	Max de Lombeke 4177 (45252)	Belgian
885	W. D. Collier	Osceola	Sam Swift 62575	Trotter
5930	Hart Bros.	Osceola	Avenir 4172 (52296)	Belgian
5981	Hart Bros.	Osceola	Girardin 53001 (71510)	Percheron
5988	Hart Bros.	Osceola	Lambert 52910	Percheron
6087	Hart Bros.	Osceola	Plunger 53063	Percheron
430	G. V. Proctor	Osceola	Colonel Duroc 37967	Trotter

CLAY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3171	Fred McKee	Dickens	Improver 4017	Clydesdale
3140	D. McMillan	Peterson	Flanche 46481 (53966)	Percheron
5485	Frank McDowell	Spencer	Crockette 50132	Percheron
5486	Frank McDowell	Spencer	Boaco 5642[illegible]	Percheron
5487	Frank McDowell	Spencer	Hector 59441 (75744)	Percheron
5995	Brusie & Martin	Spencer	Kinneth 50737	Percheron
6005	H. M. Gardner	Spencer	Heldridge's Midas 52409	Percheron
6006	H. M. Winterboer	Everly	Nogi 43376	Percheron
4277	Fred Waggoner	Webb	Cadix 45404	Percheron
6188	L. D. Thompson	Spencer	Bienvenu 22747 (41396)	Percheron
6330	P. H. P. Corbin	Royal	Sans Gene 4699 (51570)	Belgian

CLAYTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5498	J. M. Pollard	Strawberry Pt.	Barbet 1223 (25262)	Belgian
5802	John L. Schneider	Elkader	Prince du Geron 4496 ([illegible])	Belgian
5074	John Roys	Volga	Oleron 59234 (65954)	Percheron
5970	Dan Schneider	Elkader	Poli D'Or 4495 (49390)	Belgian
2241	Peter Quinn	Volga City	Mercure 25721 (43490)	Percheron
6027	James I. Cain	Elkader	Halteau 63801 ([illegible])	Percheron
172	Wm. Koth	Farmersburg	Noe ([illegible])	Belgian
72	Emma Myers	Elkader	Taupin 28442 (44770)	Percheron
1628	Meder & Donahe	Mederville	Bury Colonel 6168 (17220)	Shire
6181	Monona Horse Co.	Monona	IX 1341 (26272)	Belgian
6191	H. Koth	Monona	Dapple King 50847	Percheron
5309	Gulsvig & Collenson	St. Olaf	Fandango 22186	Percheron

CLINTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4525	Wm. Burke	Charlotte	Pasteur 3182 (41994)	Belgian
5401	A. W. Johnson	DeWitt	Louis D'Or 3361 (44360)	Belgian
5918	F. E. Aikman	Lyons	Black Diamond 67641	Percheron
6066	A. W. Johnson	DeWitt	Vaillant 64383 (68193)	Percheron
6091	Folletts Horse Co	Folletts	Attila II 56076	Percheron
6109	J. E. Hill	Almont	Abou 19616	French Draft
6110	J. E. Hill	Almont	Soko 19615	French Draft
6111	J. E. Hill	Almont	Lafayette 18169	French Draft
6131	Wm. Burke	Charlotte	Charlot du Baron 4018 (48642)	Belgian
6132	Wm. Burke	Charlotte	Owston Crown Prince 9808 (25810)	Shire

CRAWFORD COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1004	Chris Koch	Boyer	Zephie der Herlaimont (Vol. 13)	Belgian
5482	Bert McCord	Arion	Fritz 21509	Percheron
3706	Geo. W. Binnall	Dow City	Cerbere 51234 (62571)	Percheron
6226	P. J. Eggers	Denison	Mathieu de Ragnie 4834 (31092)	Belgian
6240	P. J. Eggers	Denison	Roy Ladd 19694	French Draft
6241	P. J. Eggers	Denison	Turk 59385	Percheron
6242	P. J. Eggers	Denison	Prince 59386	Percheron
6243	P. J. Eggers	Denison	Selby 45452	Percheron
6244	P. J. Eggers	Denison	Max de Waere 4741 (Vol. 17)	Belgian
6323	Mathias Bros	Dow City	Teddy R. 56559	Percheron
1700	H. Kruse	West Side	Hanksoid 33113	Trotter

DALLAS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5332	Huston Bros	Waukee	Broadway 10230 (25993)	Shire
5395	R. Reed	Perry	Don Carlos 33758	Percheron
5619	Geo. B. Clayton	Van Meter	Wrydeland's Chief 9862 (25824)	Shire
5620	Clayton & England	Van Meter	Lafrime 55266 (67501)	Percheron
5624	G. P. Long	Perry	George Bowman 34198	Trotter
5778	J. R. Gardiner	Gardiner	Dagworth Alphonso [illegible] (24161)	Shire
5779	Gardiner & Scott	Gardiner	Macaroni 64831 (67982)	Percheron
5993	E. J. Gates	Redfield	Auto Go 51087	Trotter
5784	A. J. Kasbohm	Perry	Sampson 3285	Belgian
5621	C. W. Huston	Booneville	Bucher [illegible]	Percheron
6068	W. A. Warford	Linden	Japonais 66285	Percheron
4159	C. H. Greeb	Woodward	Superbe de la Fontain 3101 (Vol. 14)	Belgian
6177	J. B. Fillman	Dexter	Beau Type de Jamoille 2702 (30136)	Belgian
6313	R. H. Ballard	Perry	Young Wide Awake 5100	Morgan
6329	A. Bentzenhouser	Dallas Center	Absent 3502	French Coach

DAVIS COUNTY.

5108	Geo. Howell	Lancaster	Dongon 48862	Percheron
3118	Chas. P. Snoddy	Bloomfield	Indi 30823	Trotter
1469	Bunch Horse Co.	Bunch	Radis 43703 (48708)	Percheron
3011	W. N. & B. N. Hendricks	Pulaski	Favorite 40211	Percheron
6347	W. S. McFarlan	Bunch	Honfleur 53252 (74632)	Percheron

DECATUR COUNTY.

5359	G. F. Henderson	Davis City	Theddlethorpe Warrior 9857 (25820)	Shire
5373	B. E. Rushing	LeRoy	Morganmont 5430	Morgan
5382	Geo. McKeowen	Pleasanton	Joyeux (33260)	Belgian
5978	C. E. Hall	Weldon	Hourra 57388 (76917)	Percheron
5618	A. H. Simmerman	Weldon	Hetre 52568 (77723)	Percheron
6149	Smith & Cronen	Garden Grove	Girton Cadet 7552 (20514)	Shire
6316	E. P. Hamilton	Garden Grove	Crow 17874	French Draft
6317	E. P. Hamilton	Garden Grove	King of Diamonds 18323	French Draft
4452	S. M. Ash	Decatur	Coco 51614	Percheron
6308	L. D. Peters	Lamoni	Tre's Brown 9086	Shire

DELAWARE COUNTY.

5351	Enterprise Horse Co.	Ryan	Bayard 52274 (68196)	Percheron
5353	W. A. Lang & Co	Greeley	Criterium 3114 (51962)	Belgian
5396	A. B. Holbert	Greeley	Prince de Fair 3854	Belgian
5197	Geo. Nieman	Earlville	Ernest 3798 (Vol. 15)	Belgian
4168	Geo. Nieman	Earlville	Bistouri 53120 (66400)	Percheron
1784	Henry Goodhile	Manchester	Dewey 9688	French Draft
5453	A. B. Holbert	Greeley	Vengeur Isaac 3893 (37890)	Belgian
5454	A. B. Holbert	Greeley	Japonais 3885 (37396)	Belgian
5455	A. B. Holbert	Greeley	Baron de Noirmont 3881 (42416()	Belgian
5456	A. B. Holbert	Greeley	Gentil Tersaet 3884 43238)	Belgian
5457	A. B. Holbert	Greeley	Mouton d'Aphain 3888 (47134)	Belgian
5458	A. B. Holbert	Greeley	Brilliant du Parc 3880 (47600)	Belgian
5459	A. B. Holbert	Greeley	Marck 3886 (48740)	Belgian

DELAWARE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5460	A. B. Holbert	Greeley	Etancon 3883 (49066)	Belgian
5461	A. B. Holbert	Greeley	Tout li Faut 3892 (52140)	Belgian
5462	A. B. Holbert	Greeley	Appolon 3889 (52142)	Belgian
5463	A. B. Holbert	Greeley	Romanus 3891 (52138)	Belgian
5464	A. B. Holbert	Greeley	Pilatus [illegible]	Belgian
5465	A. B. Holbert	Greeley	Pierrot de Brages 3890 (50486)	Belgian
5466	A. B. Holbert	Greeley	Folio 52488 (68823)	Percheron
5467	A. B. Holbert	Greeley	Genievre 52487 [illegible]	Percheron
5468	A. B. Holbert	Greeley	Gerbillon 52491 (71454)	Percheron
5469	A. B. Holbert	Greeley	Gouverneur 52492 [illegible]	Percheron
1583	Henry Goodhile	Manchester	Billy Bryan 11087	Clydesdale
1413	Carl Heiden	Ryan	Gelif 27109 (45385)	Percheron
5507	W. A. Lang & Co.	Greeley	Sidi 62080 [illegible]	Percheron
5508	W. A. Lang & Co.	Greeley	Galet 62082 [illegible]	Percheron
5509	W. A. Lang & Co.	Greeley	Lubin 62075 (66815)	Percheron
5510	W. A. Lang & Co.	Greeley	Briseleme 62076 (62268)	Percheron
5511	W. A. Lang & Co.	Greeley	Garrick 62073 (71684)	Percheron
5513	W. A. Lang & Co.	Greeley	Labyrinthe 62079 (68297)	Percheron
5514	W. A. Lang & Co.	Greeley	Rohan 62084 [illegible]	Percheron
5515	W. A. Lang & Co.	Greeley	Hidore 62071 (76262)	Percheron
5516	W. A. Lang & Co.	Greeley	Philibert 62074 (66629)	Percheron
5517	W. A. Lang & Co.	Greeley	Hepta 62072 (75935)	Percheron
5518	W. A. Lang & Co.	Greeley	Financier 62085 (67833)	Percheron
5519	W. A. Lang & Co.	Greeley	Serpentin 62077 [illegible]	Percheron
5520	W. A. Lang & Co.	Greeley	Chusco 62081 (66034)	Percheron
5521	W. A. Lang & Co.	Greeley	Gizon 62083 (71507)	Percheron
5522	W. A. Lang & Co.	Greeley	Bourdin 62078 (64404)	Percheron
5523	W. A. Lang & Co.	Greeley	Franz 3996 (52212)	Belgian
5524	W. A. Lang & Co.	Greeley	Gaspard 3999 (Vol. 16)	Belgian
5525	W. A. Lang & Co.	Greeley	Baron de Trazegnies 3993 (47740)	Belgian
5526	W. A. Lang & Co.	Greeley	Dore 3995 (47512)	Belgian
5527	W. A. Lang & Co.	Greeley	Bongo 3992 (48132)	Belgian
5529	W. A. Laug & Co.	Greeley	Apollon 3991 (51786)	Belgian
5530	W. A. Lang & Co.	Greeley	Masse D' Or De Harchies 4004 (48718)	Belgian
5531	W. A. Lang & Co.	Greeley	Fichaux de Thimeon 3998 (48362)	Belgian
5532	W. A. Lang & Co.	Greeley	Chancard de Renaix 3994 (47842)	Belgian
5533	W. A. Lang & Co.	Greeley	Louise de Thy 4001 (45738)	Belgian
5534	W. A. Lang & Co.	Greeley	Suprenant D' Ogy 4009 (47318)	Belgian
5535	W. A. Lang & Co.	Greeley	Saint Gothard 4110 (48160)	Belgian
5536	W. A. Lang & Co.	Greeley	Millo 4002 (Vol. 16)	Belgian
5537	W. A. Lang & Co.	Greeley	Haquin 4000 (38778)	Belgian
5538	W. A. Lang & Co.	Greeley	Musigny 4006 (49314)	Belgian
5539	W. A. Lang & Co.	Greeley	Max de Cour Au Bois 4005 (49338)	Belgian
5540	W. A. Lang & Co.	Greeley	Mineur 4003 (52224)	Belgian
5542	W. A. Lang & Co.	Greeley	Robert 4008 (52218)	Belgian
5543	W. A. Lang & Co.	Greeley	Voltigeur de Ghoy 4012 (Vol. 16)	Belgian
5544	W. A. Lang & Co.	Greeley	Tilon de Graux 3997 (46104)	Belgian
5545	W. A. Lang & Co.	Greeley	Viendra 4011 (Vol. 16)	Belgian
5557	A. B. Holbert	Greeley	Victor 4213 (52326)	Belgian
5558	A. B. Holbert	Greeley	Sultan de Godin 4211 (Vol. 17)	Belgian
5559	A. B. Holbert	Greeley	Paulin de Muysen 4210 (48592)	Belgian
5561	A. B. Holbert	Greeley	Joli Louis 4208 (42388)	Belgian
5562	A. B. Holbert	Greeley	Fanfeur de Neufke 4204 (Vol. 16)	Belgian
5564	A. B. Holbert	Greeley	Argus 4199 (44634)	Belgian
5565	A. B. Holbert	Greeley	Eclipse 4203 (49060)	Belgian
5566	A. B. Holbert	Greely	Trottin 4212 (47590)	Belgian
5567	A. B. Holbert	Greeley	Jean 4207 (47946)	Belgian
5568	A. B. Holbert	Greeley	Bismark 4200 (52316)	Belgian
5569	A. B. Holbert	Greeley	Capitaine de Goreux 4202 (Vol. 16)	Belgian

DELAWARE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	A. B. Holbert	Greeley	Florus II 4206 (52320)	Belgian
5571	A. B. Holbert	Greeley	Capitaine II [illegible] (52518)	Belgian
[illegible]	A. B. Holbert	Greeley	Holifam [illegible] ([illegible])	Percheron
[illegible]	A. B. Holbert	Greeley	Faisant [illegible] ([illegible])	Percheron
[illegible]	A. B. Holbert	Greeley	Orpheon 52671 ([illegible])	Percheron
[illegible]	A. B. Holbert	Greeley	Guillaume Tell 52672 ([illegible])	Percheron
5577	A. B. Holbert	Greeley	Hocciput 52673 (76659)	Percheron
5578	A. B. Holbert	Greeley	Gakau 52674 (71791)	Percheron
5579	A. B. Holbert	Greeley	Herberger 52675 (77894)	Percheron
[illegible]	A. B. Holbert	Greeley	Herboriate 52676 (77935)	Percheron
[illegible]	A. B. Holbert	Greeley	Henretard 52678 (76855)	Percheron
5583	A. B. Holbert	Greeley	Hescape 52679 (76307)	Percheron
[illegible]	A. B. Holbert	Greeley	[illegible]	Percheron
[illegible]	A. B. Holbert	Greeley	Honore 52681 (77288)	Percheron
5586	A. B. Holbert	Greeley	Hacmard 52682 (73519)	Percheron
5587	A. B. Holbert	Greeley	Hermieux 52683 (74203)	Percheron
[illegible]	A. B. Holbert	Greeley	Hobro 52684 (76820)	Percheron
[illegible]	A. B. Holbert	Greeley	Haricot 52685 (73500)	Percheron
5591	A. B. Holbert	Greeley	Hocco 52687 (76645)	Percheron
5592	A. B. Holbert	Greeley	Horaire 52688 (74903)	Percheron
5593	A. B. Holbert	Greeley	Hamelet 52689 (75824)	Percheron
[illegible]	A. B. Holbert	Greeley	Gandin 52690 (72603)	Percheron
[illegible]	A. B. Holbert	Greeley	Gagne Denier 52691 ([illegible])	Percheron
[illegible]	A. B. Holbert	Greeley	Gala [illegible] ([illegible])	Percheron
5597	A. B. Holbert	Greeley	Herode [illegible] ([illegible])	Percheron
[illegible]	A. B. Holbert	Greeley	Hesperis [illegible] ([illegible])	Percheron
[illegible]	A. B. Holbert	Greeley	Gladiator 52695 (72752)	Percheron
[illegible]	A. B. Holbert	Greeley	Goyer 52696 (70277)	Percheron
5601	A. B. Holbert	Greeley	Ducat 52697 (68923)	Percheron
[illegible]	A. B. Holbert	Greeley	Hexagone 52699 (77855)	Percheron
5604	A. B. Holbert	Greeley	Hoche 52700 (77862)	Percheron
5605	A. B. Holbert	Greeley	Hibou 52701 (76913)	Percheron
5606	A. B. Holbert	Greeley	Granaud 52702 (72983)	Percheron
[illegible]	A. B. Holbert	Greeley	Rosier 52703 (67204)	Percheron
[illegible]	A. B. Holbert	Greeley	Horvari 52704 (78033)	Percheron
[illegible]	A. B. Holbert	Greeley	Hippocrate 52705 (74636)	Percheron
5610	A. B. Holbert	Greeley	Galon 52706 (70762)	Percheron
5611	A. B. Holbert	Greeley	Historial 52707 (77248)	Percheron
5612	A. B. Holbert	Greeley	Historien 52708 (74858)	Percheron
5613	A. B. Holbert	Greeley	Hast 52709 (75563)	Percheron
5614	A. B. Holbert	Greeley	Hurik 52710 (76629)	Percheron
5641	A. B. Holbert	Greeley	Glanneux 52762 (69966)	Percheron
5642	A. B. Holbert	Greeley	Hygrogna 52763 (76706)	Percheron
5643	A. B. Holbert	Greeley	Hyprocrate 52764 (77658)	Percheron
5644	A. B. Holbert	Greeley	Hallier 52765 (74596)	Percheron
5645	A. B. Holbert	Greeley	Hante 52766 (75882)	Percheron
5646	A. B. Holbert	Greeley	Hemoine 52767 (75419)	Percheron
5647	A. B. Holbert	Greeley	Horace 52768 (76324)	Percheron
5649	A. B. Holbert	Greeley	Henri 52770 (74459)	Percheron
5650	A. B. Holbert	Greeley	Humberto 52771 (76294)	Percheron
5651	A. B. Holbert	Greeley	Hongreur 52772 (76067)	Percheron
5652	A. B. Holbert	Greeley	Holbac 52773 (76664)	Percheron
5653	A. B. Holbert	Greeley	Zephir 4351 (Vol. 16)	Belgian
5654	A. B. Holbert	Greeley	Titan 4350 (Vol. 16)	Belgian
5655	A. B. Holbert	Greeley	Petten 4343 (52390)	Belgian
5656	A. B. Holbert	Greeley	Sultan 4346 (52404)	Belgian
5657	A. B. Holbert	Greeley	Rameur 4345 (Vol. 16)	Belgian
5658	A. B. Holbert	Greeley	Robinson de Luth 4344 (Vol. 16)	Belgian
5659	A. B. Holbert	Greeley	Mercure de Wayaux 4341 (Vol. 17)	Belgian
5660	A. B. Holbert	Greeley	Moto 4243 (52348)	Belgian
5662	A. B. Holbert	Greeley	Espoir d' Ostin 4331 (Vol. 16)	Belgian
5663	A. B. Holbert	Greeley	Bayard de Genly 4238 47684)	Belgian
5664	A. B. Holbert	Greeley	Clarion de Segel 4329 (Vol. 16)	Belgian
5665	A. B. Holbert	Greeley	Charles Van Heurne 4330 (Vol. 16)	Belgian
5666	A. B. Holbert	Greeley	Bayard Rho 4327 (Vol. 16)	Belgian

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5667	A. B. Holbert	Greeley	Faro de Court 4332 (51408)	Belgian
5668	A. B. Holbert	Greeley	Fils 4333 (Vol. 16)	Belgian
5669	A. B. Holbert	Greeley	Bismark de St. Gery 4326 (Vol. 16)	Belgian
5670	A. B. Holbert	Greeley	Hubert 4334 (52406)	Belgian
5671	A. B. Holbert	Greeley	Horizon 4335 (Vol. 16)	Belgian
5672	A. B. Holbert	Greeley	Major de Zuyen [illegible] (Vol. 16)	Belgian
5673	A. B. Holbert	Greeley	Infernal 4336 (Vol. 16)	Belgian
5674	A. B. Holbert	Greeley	Lord 4337 (52408)	Belgian
5675	A. B. Holbert	Greeley	Laboureur 4338 (52388)	Belgian
5676	A. B. Holbert	Greeley	Tapioca 4349 (Vol. 16)	Belgian
5677	A. B. Holbert	Greeley	Tambour D' Oupeye 4348 (Vol. 17)	Belgian
5678	A. B. Holbert	Greeley	Suprenant de Remicourt [illegible]	Belgian
5679	A. B. Holbert	Greeley	Argoed Baronet 10930 (26936)	Shire
5680	A. B. Holbert	Greeley	Rea Jeweller 10929 (26930)	Shire
5681	A. B. Holbert	Greeley	Rea Dandy 10928 (26929)	Shire
5682	A. B. Holbert	Greeley	Moors Majestic 10927 (27472)	Shire
5683	A. B. Holbert	Greeley	Buildings Chief 10926 (26938)	Shire
5684	A. B. Holbert	Greeley	Ford King 10925 (26928)	Shire
5685	A. B. Holbert	Greeley	Imp. Downham Delight [illegible]	Hackney
5686	A. B. Holbert	Greeley	Imp. Ryburn Viscount 1272 ([illegible])	Hackney
5687	A. B. Holbert	Greeley	Imp. Ely Aspirant 1273 (10913)	Hackney
5688	A. B. Holbert	Greeley	Imp. Golden Charm 1274 (10912)	Hackney
5689	A. B. Holbert	Greeley	Imp. Ely Friar 1275 (10662)	Hackney
5690	A. B. Holbert	Greeley	Imp. Wood Radium 1277 (10915)	Hackney
5691	A. B. Holbert	Greeley	Imp. Ely Golden Lion 1276 ([illegible])	Hackney
5692	A. B. Holbert	Greeley	Gallican 4185	French Coach
5693	A. B. Holbert	Greeley	Galetas 4186	French Coach
5694	A. B. Holbert	Greeley	Wecker 5183 (2242)	German Coach
5695	A. B. Holbert	Greeley	Wahrsager 5181 (2240)	German Coach
5696	A. B. Holbert	Greeley	Wagemut 5185 (2243)	German Coach
5697	A. B. Holbert	Greeley	Wanderer 5187 (2241)	German Coach
5698	A. B. Holbert	Greeley	Werkmeister 5189 (2244)	German Coach
5777	A. B. Holbert	Greeley	Guittoni 52461 (72886)	Percheron
5868	A. B. Holbert	Greeley	Gabon 52973 (72807)	Percheron
5869	A. B. Holbert	Greeley	Dartagnon 52967 (62419)	Percheron
5871	A. B. Holbert	Greeley	Halevy 52969 (73490)	Percheron
5872	A. B. Holbert	Greeley	Grand Duc 52970 (71392)	Percheron
5873	A. B. Holbert	Greeley	Helicon 52971 (75920)	Percheron
5874	A. B. Holbert	Greeley	Gehova 52972 (71296)	Percheron
5875	A. B. Holbert	Greeley	Huet 52974 (77136)	Percheron
5876	A. B. Holbert	Greeley	Henri 52975 (73557)	Percheron
5877	A. B. Holbert	Greeley	Gibus 52890 (70985)	Percheron
5907	A. B. Holbert	Greeley	Hildebert 4661 (Vol. 16)	Belgian
5908	A. B. Holbert	Greeley	Marc de la Bourgogne 4662 (Vol. 16)	Belgian
5909	A. B. Holbert	Greeley	Monte Carlo 4664 (Vol. 17)	Belgian
5910	A. B. Holbert	Greeley	Noe 4665 (52480)	Belgian
5911	A. B. Holbert	Greeley	Milord 4663 (Vol. 16)	Belgian
5912	A. B. Holbert	Greeley	Picavez 4666 (Vol. 16)	Belgian
5913	A. B. Holbert	Greeley	Rigo 4668 (52482)	Belgian
5914	A. B. Holbert	Greeley	Poto de Geron 4667 (Vol. 16)	Belgian
5915	A. B. Holbert	Greeley	Wallon 4669 (Vol. 17)	Belgian
4200	J. B. Schuster	Hopkinton	Alcos 47680	Trotter
2096	Henry Goodhile	Manchester	Sampson 26529	Percheron

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	Henry Goodhile	Manchester	Castelar I 29842	Percheron
4557	Henry Goodhile	Manchester	Prince Brilliant 11688	Clydesdale
3327	Henry Goodhile	Manchester	Dr. Hardie 43521	Trotter
6160	W. A. Lang & Co.	Greeley	Costa Rica 4735 (58528)	Belgian
[illegible]	A. B. Holbert	Greeley	Stuntney Arsaces (23739)	Shire
5470	A. B. Holbert	Greeley	Gallican 52490 (71299)	Percheron
2488	Henry Pierce	Manchester	Phimo [illegible] (45936)	Percheron
[illegible]	A. B. Holbert	Greeley	Midas [illegible]	Belgian
6277	W. A. Lang & Co.	Greeley	Patrick 68335 (66032)	Percheron
6290	A. B. Holbert	Greeley	Gecko 52119 (71424)	Percheron
6291	A. B. Holbert	Greeley	Avant 53145 ([illegible])	Percheron
6292	A. B. Holbert	Greeley	Harfang 53146 (75546)	Percheron
6293	A. B. Holbert	Greeley	Hercule 53230 (75133)	Percheron
6294	A. B. Holbert	Greeley	Hoche [illegible] ([illegible])	Percheron
6295	A. B. Holbert	Greeley	Holger 53231 (76827)	Percheron
6296	A. B. Holbert	Greeley	Haussmann 53266 (74464)	Percheron
6297	A. B. Holbert	Greeley	Hermais 53228 ([illegible])	Percheron
6298	A. B. Holbert	Greeley	Harcourt 53227 (77832)	Percheron
6299	A. B. Holbert	Greeley	Hirondeau 52147 (75857)	Percheron
6300	A. B. Holbert	Greeley	Hugo [illegible] ([illegible])	Percheron
6301	A. B. Holbert	Greeley	Grevy 53121 (70791)	Percheron
6302	A. B. Holbert	Greeley	Gladiator 53229 (71313)	Percheron
6303	A. B. Holbert	Greeley	Hallobroge 53148 (74346)	Percheron
6304	A. B. Holbert	Greeley	Hoche 53129 (77419)	Percheron
6306	W. A. Lang & Co.	Greeley	Fakir [illegible] ([illegible])	Percheron
6324	Albert Carlson	Ryan	McGregor Gift 43962	Trotter
6364	A. B. Holbert	Greeley	Domino 47534 (62764)	Percheron

DES MOINES COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	C. V. LeBoutillier	Sperry	Teddy 34678	Trotter
[illegible]	Henry Heibuer	Danville	Grimacier 64819 (72248)	Percheron
[illegible]	W. H. Brown	Burlington	Rebel Hal 01367	Trotter
[illegible]	E. G. Willard	Burlington	[illegible]	Trotter
441	W. H. Ryun	Burlington	Mambrino Kirkwood [illegible]	Trotter
4505	W. H. Ryun	Burlington	Prince Albert 54069	Percheron
6271	C. E. Perkins	Burlington	Shoquoquon 3721	Saddle Horse

DICKINSON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4277	A. D. Stewart	Terrill	Cadix [illegible]	Percheron
5917	D. S. Blakey	Spirit Lake	[illegible]	Percheron
5241	A. E. Bush	Lake Park	[illegible]	Percheron
6014	S. Anderson & Sons	Spirit Lake	Jonas 41868 (55201)	Percheron
[illegible]	Frank A. Arens	Lake Park	Wrestler Jr. 29323	Trotter
[illegible]	S. Anderson & Sons	Spirit Lake	J. A. B. D. 40744	Trotter

DUBUQUE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	Henry Thul	Graf	Garcon de Bossierre 1341 (25538)	Belgian
[illegible]	Percheron Horse Association	Peosta	Vibrant 50560 (59941)	Percheron
5358	J. E. O'Brien	Farley	Bramhope Bachelor 9211 (20290)	Shire
[illegible]	Petersburg Horse Co.	Dyersville	Botha De Wyn (33298)	Belgian
[illegible]	New Vienna & Dyersville Perch. Horse Co	New Vienna	Josias 51504 (66166)	Percheron
6104	J. C. Cavanaugh	Ryan	Leslie Boy 43587	Trotter

DUBUQUE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6171	F. B. Ronan	Farley	Vandeeman [illegible]	Trotter
5349	Joseph Smith	Graf	Garcon de Fize 1341 (25538)	Belgian

EMMET COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1241	Ben J. Johnson	Estherville	Khedive 11651	French Draft
5430	Fairview Stock Farm	[illegible]	Benjamin [illegible]	Percheron
5429	W. F. Wilson	Wallingford	Ben Harrison [illegible]	French Draft
3018	M. R. Weir	Estherville	[illegible]	Percheron
3017	C. M. Schenck	Estherville	[illegible] Roy [illegible]	Percheron
6305	Alfred S. Snyder	Estherville	Rochefort 23080 (44567)	Percheron
6348	S. B. Cayler	Dolliver	Boro Hero 10229 (24978)	Shire

FAYETTE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3176	Barney Schlichte	Waucoma	Fancy Boy [illegible]	Clydesdale
5447	Oscar Glime	Arlington	Cardinal [illegible]	Trotter
5782	Mark F. Fairbairn	Arlington	[illegible]	French Draft
5276	Henry Ricks	St. Lucas	Major Crespi [illegible]	Percheron
5005	Dwyer & Toomey	Wadena	Gayard [illegible] (72073)	Percheron
4198	E. L. Nus	Arlington	Premier [illegible]	Percheron
5966	John N. Foreman	St. Lucas	Major Mac [illegible]	Clydesdale
5998	Clermont Percheron Horse Co.	Clermont	[illegible]	Percheron
6015	R. J. Campbell	Hawkeye	Best [illegible]	Percheron
5936	Wm. F. Rhoe	Donnan	Carton de Remi [illegible] (Vol. 17)	Belgian
6059	L. V. Humphrey	West Union	[illegible]	Percheron
6082	G. D. Darnall	West Union	[illegible]	Trotter
6147	C. M. Kerr	Clermont	Blaisdon Harold II 6683 (20265)	Shire
1023	W. E. Howard & Sons	Elgin	Monos 4143	French Coach
3934	Whitely Bros.	Fayette	Severn Melton 8931 [illegible]	Shire
1359	J. C. Becker	Oelwein	[illegible]	Trotter
1256	Irvine & Leverton	Oelwein	Eric 2070 (6702)	Belgian
3263	Frank Humphrey	Elgin	Marcus [illegible]	Percheron

FLOYD COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5392	E. E. Sherman	Nora Springs	John A. Donald 11146	French Draft
5481	W. E. Barney	Nora Springs	Ab Patch [illegible]	Trotter
5703	Henry Moll	Rockford	Palestro I 52027 (67506)	Percheron
4760	L. M. Smith	Marble Rock	Marceau 51322	Percheron
2740	Enoch L. Smith	Marble Rock	Travailleur 22656 (45430)	Percheron

FRANKLIN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5375	Joe H. Smith	Hampton	Letton Boy 39398	Trotter
4759	R. C. Morehouse	Sheffield	Coleman Oak 36789	Trotter
5377	Chas. H. Roe	Hampton	Norvalwood 36144	Trotter
4827	Fred I. Adler	Hampton	Stately Guard [illegible]	Trotter
6108	Butler Throssel	Sheffield	Roscoe 52812	Percheron
2577	L. W. Bailey	Hampton	King 22597	Percheron
2468	I. V. Merriss	Hampton	Prince Albert 4725	Morgan

FREMONT COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	T. E. & A. R. Patience	Imogene	Robert Burns 552	Shire
[illegible]	W. O. Johnson	Randolph	Francis [illegible] ([illegible])	Percheron
2720	Clyde Edgerton	Riverton	Francois II 40111	Percheron

GREENE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5335	W. H. Dunbar	Jefferson	Arlington 51083	Percheron
[illegible]	Harman & Son	Jefferson	Balzac [illegible] (42038)	Belgian
2401	Clyde E. Gunn	Grand Junction	Cardiff 9918	Clydesdale
[illegible]	Chas. James	Paton	Glommen 43056 (69424)	Percheron
[illegible]	G. W. Hartman	Jefferson	Faafar [illegible]	Belgian
[illegible]	C. F. Jones	Rippey	Huguenot 61397 (78367)	Percheron
5750	Ben. F. Phillips	Jefferson	Bayard [illegible]	Percheron
5838	J. W. Hillman	Dana	Adinston [illegible]	Clydesdale
[illegible]	H. V. Hammar	Jefferson	Genesee [illegible]	Percheron
[illegible]	E. H. Jackson	Jefferson	Convictor 48029	Trotter
6018	Wm. J. Hunt	Churdan	Nicholas [illegible]	Percheron
[illegible]	G. W. Mattingly	Jefferson	Burnie Brino [illegible]	Trotter
6123	Peter Mosteller	Scranton	Black Frenchman 44569	Percheron
6136	T. E. Dreher	Scranton	Cog [illegible]	Belgian
6148	Deal Bros.	Scranton	Garousse 63846 (70514)	Percheron
2196	Marquis & McClurg	Jefferson	Pompon Jr. 45197	Percheron
[illegible]	G. L. Holmes	Scranton	Tarn [illegible]	Percheron
[illegible]	Geo. A. Kulow	Paton	Horizon 43174 (74547)	Percheron

GRUNDY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5753	P. J. Baasch	Conrad	Ajax 1847	French Draft
[illegible]	P. J. Baasch	Conrad	B. Bismark 51082	Percheron
3225	H. A. Bottsch	Reinbeck	Vainquer (Vol. 12)	Belgian
5974	Percheron Horse Co.	Reinbeck	Biham 42863 (54605)	Percheron
[illegible]	A. F. Helfer	Conrad	Billy Mix 47126	Trotter
[illegible]	Aaron Coulter	Conrad	Grasset 51862 (72549)	Percheron
4512	Reinbeck Horse Co.	Reinbeck	Confident III [illegible]	Percheron
2942	Chas H. Stubbs	Conrad	Durand [illegible]	Percheron
6257	John Ramsey	Reinbeck	Braon Conquerer 14115	Clydesdale
6337	J. T. Morrison	Conrad	Glaneur 55261 (68839)	Percheron
5011	J. T. Morrison	Conrad	Forrest Rose 3rd 2290	Saddle horse

GUTHRIE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5788	H. A. Hubbard	Casey	Goulet 58270 (70377)	Percheron
5073	C. Beller	Panora	Colbert 59243 (65965)	Percheron
693	Francis McDonald	Stuart	Val St. Pair 3148	French Coach
2089	W. A. Kenyon	Wichita	Ami de Givry 2281 (Vol. 13)	Belgian
5738	C. H. Malonnee	Bagley	Decide 42819 (50242)	Percheron
5985	J. F. McNama	Menlo	Lucrog 65700 (68574)	Percheron
6094	A. Burrhus	Bayard	Bartlett Boy 29380	Trotter
6210	S. Dunbar	Casey	Numaro du Fosteau 4792 (50946)	Belgian

HAMILTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	C. J. DeFrance	Williams	Nota D. [illegible]	Trotter
4316	O. R. Denekas	Kamrar	Hardi de Meerbeke (Vol. 12)	Belgian
[illegible]	Halderman & Smart	Williams	Chevalier [illegible]	French Draft
4011	Belgian Horse Co	Kamrar	Franconi de Sinnes 3087 ([illegible])	Belgian
6163	McLaughlin Bros	Williams	Dandy's Duke [illegible]	Clydesdale
6167	O. A. Thoreson	Ellsworth	Money Maker [illegible]	French Draft

HANCOCK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	E. F. Klein	Britt	Uzel Jr. 4174	French Coach
[illegible]	A. J. Sweet	Woden	[illegible]	Percheron
5903	Wm. Erdman	Corwith	French Victor 10876	French Draft
[illegible]	J. N. [illegible]	Garner	Hase [illegible]	Percheron
[illegible]	M. G. Reidel	Garner	Raven [illegible]	French Draft
6155	H. J. Weiland	Britt	[illegible]	Percheron
[illegible]	H. C. Dunlap	Corwith	[illegible] de Vive [illegible] (32680)	Belgian
6166	John Dominy	Goodell	[illegible] de Hal [illegible] (Vol. 16)	Belgian
6284	Greimann & Stromer	Garner	Robert de Thimeon [illegible] ([illegible])	Belgian

HARDIN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5371	D. D. Goodenough	Iowa Falls	Eber D. 46640	Trotter
5743	Bales & Hammer	New Providence	Burdette 43734	Percheron
5746	D. K. Farris & Sons	New Providence	Highland Castle Logan 43036	Percheron
5771	Seward Bros.	New Providence	Mack [illegible]	Percheron
5744	Wm. H. Carlson	Eldora	Hannibal 43733	Percheron
5986	Chas. Kalpan	Alden	Hippocampe 65888 (74212)	Percheron
4115	Union Horse Co.	Union	Abel 47841	Percheron
6106	M. H. Lunning	Radcliffe	Genepi 64786 (69692)	Percheron
4546	C. H. Kasischke	New Providence	Baldiller 42616	Trotter
3334	Ole E. Peterson	Radcliffe	Buster Brown 44631	Percheron

HARRISON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2250	James Blackwood	Dunlap	Happy Boy 50842	Percheron
5789	H. S. McDole	Dunlap	Elair 3564	Belgian
5556	Arthur Hillman	Logan	Merton Jr. [illegible]	French Draft
4547	Arthur Hillman	Logan	Nicholas 45051	Percheron
3111	Tracy M. Noe	Mondamin	Morgan Star 32926	Trotter
5924	P. C. McNally	Dunlap	Charley Starr [illegible]	Trotter
6064	G. D. Edmonds	Little Sioux	Tobie de Rhode 4268 (Vol. 16)	Belgian
6083	Thos. Cover & Sons	Dunlap	Rodrique 64792 (67518)	Percheron
6092	John Laidler	Pisgah	Instard II 53558	Percheron

HENRY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5345	W. N. Watson	Hillsboro	Thomas W. Lawson 47850	Trotter
5410	G. F. Wilmeth	Salem	Wyvis 50320	Trotter
3561	W. N. & J. E. Watson	Hillsboro	Imprint Jr. 33546	Trotter
5432	George Watts	Salem	Up Guard 2848	French Coach
5381	Jacob Beckley	Mt. Pleasant	Pat Compy 48727	Trotter

HENRY COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5685	E. Tulk	Mt. Pleasant	Hiroux 52576 (78018)	Percheron
3234	Parrot McDonald	New London	Tyrolien [illegible]	French Coach
2525	Amasa Miller	Olds	Prince Monarch 40529	Percheron
5919	L. T. Farmer	Wayland	Klein Toblitsky 51333	Trotter
5948	J. M. & J. W. Plants	Winfield	Crown Duke 11221	Shire
5949	J. M. & J. W. Plants	Winfield	Cristan 51440 (48725)	Percheron
6080	J. W. Graber	Salem	Hypocras 66110 (77345)	Percheron
6040	A. L. Bergsten	Winfield	Col. Alo 43974	Trotter
6054	J. R. Hibbet	Winfield	Lavron Chief 49731	Trotter
3235	Herron & McDonald	New London	Ponard 24489 (41564)	Pereneron
6120	C. T. Hampton	Mt. Pleasant	Cadet 43457	Percheron
6142	Harmon Ogron	Hillsboro	Frenlon 27553 (43727)	Percheron
6354	S. T. Hills	Mt. Pleasant	Salem 47781	Percheron
6253	S. T. Hills	Mt. Pleasant	King Vincent 35542	Trotter
1042	Sumner Barnes	Mt. Pleasant	Serius 17750	Trotter
6312	L. M. Hartley	Salem	Habert 62452 (74722)	Percheron
6328	C. C. & Jake Wenger	Wayland	Bon Carlsbad 5417 (47184)	Belgian
6329	C. C. & Jake Wenger	Wayland	Gibelet 62595 (70853)	Percheron

HOWARD COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5499	M. P. Lydon	Cresco	Champion 42714	Percheron
6017	A. Young	Lime Springs	Pride of Bloomfield 9467	Clydesdale
2835	John F. Murtha	Cresco	Brilliant 49197 15192	Percheron and French Draft
138	V. F. Krall	Cresco	Talmage 1069	Belgian
6326	S. A. Converse	Cresco	Royal Prince 13523	Clydesdale
6327	S. A. Converse	Cresco	Scotch Prince 13522	Clydesdale

HUMBOLDT COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5627	Hawley & Ives	Pioneer	Marque de Stuyve 4197 (Vol. 13)	Belgian
5807	W. R. Benedict	Renwick	Farouche 18951 (68982)	French Draft
5951	Peter Beck	Humboldt	Graveur 64843 (71071)	Percheron
5953	Peter Beck	Humboldt	Chainville 52371 (66409)	Percheron
5955	Peter Beck	Humboldt	Bitter de Ruys 4433 (52420)	Belgian
5980	H. M. Lambert	Bradgate	Tony 14872	French Draft
5983	M. J. Kellner	Bode	Garligliano 52918 (71680)	Percheron
2360	Brown Bros. & Clark	Humboldt	Corail 14861 (62679)	Percheron

IDA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5952	Geo. E. Miller	Ida Grove	Edouard de Borsu 3644 (45214)	Belgian
6133	Mrs. Lillis A. Jacques	Galva	Prince Matchless of Galva 13501	Clydesdale
6157	Gaylord Bros.	Ida Grove	Gamoneer 50136	Trotter
6211	V. D. Wolcott	Battle Creek	Acre 64951 (66208)	Percheron

IOWA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5275	Chris Teggartz	Williamsburg	Bolivar 56547	Percheron
125	R. W. Underhill	Ladora	Robert de Lillo (25508)	Belgian
2204	Gust. Albart	Ladora	Cesar de Merchtem 2588 (36802)	Belgian

IOWA COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1037	Herman Mercer	Victor	Handsome Prince II 7786	Clydesdale
5708	Thos. Willas & Co	Marengo	Marconi 4176 (Vol. 17)	Belgian
4795	C. E. Frost	Williamsburg	Espoir de Ghorain 3580 (45690)	Belgian
5784	C. E. Frost	Williamsburg	Morse 2214 (4[illegible]	Percheron
3572	F. L. Wilson	Marengo	Senlerton 43784	Trotter
2978	Karl F. Meier	Marengo	Printannier 28744 (47059)	Percheron
6010	J. H. Fancher	North English	Rose Prince [illegible]	Clydesdale
6047	W. W. Lutton	North English	Sebastain 1895	Clydesdale
6048	W. W. Lutton	North English	Cambushinnie Prince Jr [illegible]	Clydesdale
6055	Mapledale Draft Horse Co.	Williamsburg	Bayard de Cortil 2302 [illegible]	Belgian
6246	Geo. L. Gates	Marengo	[illegible]	Percheron
127	Chester Davis	Marengo	Keota Edward [illegible]	Percheron
5990	Oliver Davis	Marengo	June Boy [illegible]	Percheron
3343	H. M. Hall	North English	Keota Hymen 31887	Percheron

JACKSON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5347	Belgian Up-To-Date Horse Co.	Bellevue	Bistouti 1401 (21786)	Belgian
5400	F. L. Roach	Preston	Caesar 17021	French Draft
936	Preston-Brown Belg. Horse Co.	Preston	Marquis de Velroux (Vol. 13)	Belgian
5822	Wm. F. Meinke	Maquoketa	Judge King [illegible]	Saddle Horse
5823	Wm. F. Meinke	Maquoketa	Charly Boy 3778 (46774)	Belgian
5847	Chafer Bros.	Sabula	Major [illegible]	French Draft
6116	R. J. Crawford	Miles	Martin 3964 (Vol. 16)	Belgian
6259	G. H. McClellan	Maquoketa	Victor 10884	Clydesdale
6274	D. H. Anderson	Maquoketa	Von Wood 47639	Trotter
6275	D. H. Anderson	Maquoketa	Van Moore Jr. 52828	Trotter
6276	D. H. Anderson	Maquoketa	Arion B. 52144	Trotter
6335	Farmers' Horse Co.	Miles	Yohn [illegible]	Percheron

JASPER COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2410	M. Deitrick	Monroe	Arnold M 15669	Trotter
5235	Thos. Philson	Valeria	Lee Allerton Jr. 41612	Trotter
5492	C. F. Blattner	Prairie City	Grand Cecil 50709	Trotter
5501	C. Dullard	Colfax	Solvano 9729 (25804)	Shire
2020	S. H. Beals	Ira	Lacy 4[illegible]	Percheron
5339	Homer Thompson	Newton	Wenona Banker II 5725	Shire
5861	Geo. Eggert	Newton	Liseron 3364 (38970)	Belgian
5923	Henry Mathes	Lynnville	Agel 48510	Percheron
6037	Geo. Eggert	Newton	Hack 61430 (73655)	Percheron
6044	J. P. Brunner	Sully	Fernottis 41329	Trotter
4094	Sage & Clark	Sully	Gold Dust 12997	Clydesdale
6115	James Tough	Killduff	Gracieux 64953 (72948)	Percheron
6173	H. W. Klopping	Newton	Docteur 57519 (68277)	Percheron
6215	Robt. Miller	Mingo	Hydrologue 53105 (74883)	Percheron
5925	A. E. Cole	Colfax	Marquis 57078	Percheron
6004	J. P. Brunner	Sully	Cadet 4174 (52298)	Belgian

JEFFERSON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5341	Willis Reno	Batavia	Cissel 1493	Saddle Horse
5309	Nady Bros.	Fairfield	Pilote 57021 (68325)	Percheron
5407	Wm. Case & Co.	Fairfield	Moussard 56705 (65188)	Percheron
5399	Geo. Lundquist	Pleasant Plain	Pilote 57021 (68325)	Percheron
5816	C. Vaught	Libertyville	Waldo 17925	French Draft
5887	J. S. Snider	Linby	Hugo 43333 (77735)	Percheron

JEFFERSON COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5888	J. S. Sumer	Linby	Colon 2743 (58350)	Percheron
5626	W. H. Steele	Packwood	Alert 1590	French Draft
1141	W. G. Allison	Libertyville	Carroll 19192	Percheron
6152	Willis Reno	Batavia	Brilliant 17805	French Draft
6250	Frank Dustin	Fairfield	Max 13336	Clydesdale
6281	Nady Bros.	Fairfield	Hindou 64808 (76023)	Percheron
6282	Nady Bros.	Fairfield	Harenguet 64809 (77444)	Percheron
6349	M. S. Welsh	Fairfield	Teddy 18778	French Draft

JOHNSON COUNTY.

[illegible]	John Eden	Lone Tree	Monarch 46703	Percheron
[illegible]	E. Edmonds	Lone Tree	Autumn Prince 11825	Clydesdale
6107	Crawford & McCullough	Lone Tree	Heliogable 40838 (74450)	Percheron
[illegible]	R. H. Alt	Iowa City	[illegible] 5341 ([illegible])	Percheron
6247	J. W. Dwyer	Solon	Royal Duke XVI 11009 (24577)	Shire
[illegible]	J. W. Dwyer	Solon	Bradgate Blue Jacket 8401 (21989)	Shire
5549	John Eden	Lone Tree	Barbara 51435 (67986)	Percheron

JONES COUNTY.

5361	Wm. Sandhouse	Monticello	Newton Ensign 6620	Shire
5473	Wapsie Valley Perch. Horse Co	Anamosa	Berlin 51825 (61560)	Percheron
5840	Benjamin & Rogers	Oxford Junction	Postland Gentleman 10260 (25620)	Shire
5866	C. H. Schwab	Oxford Junction	Pink 19433	French Draft
5898	H. A. Ward	Monticello	Marcus G. 33024	Trotter
5312	J. M. Green	Wyoming	Europe 1490	French Draft
5967	A. Simmons	Olin	Exton First Lord 10038 (24237)	Shire
6089	C. E. Bottomstone	Wyoming	Knottingly Valentine 10377 (25332)	Shire
6098	D. K. Brady	Scotch Grove	J. T. Lannigan 46430	Trotter
6267	Geo. Tobiason	Monticello	Barney's Pride 12260	Clydesdale

KEOKUK COUNTY.

5497	Emil Fixmer	Harper	Rosco 18528	French Draft
5795	Geo. L. Dutton	Sigourney	Duke 56249	Percheron
5796	Geo. L. Dutton	Sigourney	Blue Boy II 10402 (25345)	Shire
916	H. L. & A. A. Peiffer	Harper	Alma Samson 5402 (16485)	Shire
278	Roy Shelly	Ollie	Sully's Jim 44488	Percheron
5962	Henry Shy & Sons	Richland	Lolworth Baron 9349 (24392)	Shire
1590	Levi C. Ulin	Hayesville	Tirelarigot 10039 (57124)	French Draft
6001	R. H. Schultz	Hedrick	Equateur de Wevelghem 1912 (26760)	Belgian
6090	J. P. Jones	Martinsburg	Napoleon 50251	Percheron
6126	Dexter Eller	Hedrick	Delacour 9346 (23223)	Shire
6127	Dexter Eller	Hedrick	Gamin de Boulant 4488 (39144)	Belgian
6158	John Weber	Hedrick	Eclaireur 4691 (Vol. 16)	Belgian
6162	Dayton Stanley	What Cheer	Prince B. 39139	Trotter
6178	A. F. McClure	Keswick	American Royal Duke 11396 (23003)	Shire
6196	J. H. Bottger	Ollie	Buenos Ayres 9350 (24095)	Shire
6197	J. H. Bottger	Ollie	Gregory B. 50822	Trotter

KEOKUK COUNTY CONTINUED

6198	J. H. Bottger	Ollie	Ferry Victor 825 ([illegible])	Hackney
6201	L. W. Barnhardt	South English	Bonbush [illegible]	Percheron
6202	L. W. Barnhardt	South English	Galerne [illegible] ([illegible])	Percheron
6203	L. W. Barnhardt	South English	Hublot 57839 (78084)	Percheron
6212	Chas. C. Bender	Pekin	Deardulf [illegible]	Clydesdale
6340	Victor Vercheval	Harper	Joseph 4320 (Vol. 16)	Belgian
6341	Victor Vercheval	Harper	Ely Chancellor [illegible] (26201)	Shire
6342	Victor Vercheval	Harper	Ravin [illegible] ([illegible])	Percheron
6343	Victor Vercheval	Harper	Keota Edger [illegible]	Percheron
6344	Victor Vercheval	Harper	Hannon [illegible] ([illegible])	Percheron
6345	Victor Vercheval	Harper	Harriman [illegible]	Percheron
6346	P. W. Heninger	Hedrick	[illegible]	Percheron

KOSSUTH COUNTY.

5405	Kossuth Horse Co	Algona	Oakland Elrod [illegible]	Trotter
2132	Rake & Hammer	Algona	Vigoureux [illegible] ([illegible])	Percheron
5007	Carl Blakely	Irvington	[illegible]	Percheron
3144	John Briggs	Titonka	Stanislas 22881 (43502)	Percheron
5184	L. E. Whitehill	Swea City	Max H[illegible]	Shire
91	F. A. Witham	Whittemore	Wenona Tom [illegible]	Percheron
5742	James Pedley	Algona	King Charming 13517	Clydesdale
184	L. A. & E. C. Taylor	Algona	Vic 31915	Trotter
2795	Joseph Kroppen	Germania	Peter the Great 20321	Percheron
4804	Powelson Bros	Wesley	Aguila [illegible] ([illegible])	Belgian
5968	A. W. Hasse	Fenton	Edward [illegible]	Percheron
5714	M. J. Mann & Co	Burt	Gourdon 61592 (70297)	Percheron
4781	Hart, Carlson & Co.	Sexton	Gramont 51895 (69398)	Percheron

LEE COUNTY.

5435	Henry Weirather	Montrose	Narcisse 45804 (63276)	Percheron
5901	Vorwaldt & Lohman	Fort Madison	Discours 57518 (63251)	Percheron
5971	David Willard	West Point	David W. 51479	Trotter
6053	S. E. Wharton	Montrose	Severn's Highflyer 8130	Shire
6057	Geo. B. Beckett	Montrose	Noble 52881	Percheron
6112	Theo. Vonderhaar	West Point	Vidoc [illegible]	Percheron
6113	Theo. Vonderhaar	West Point	Keota Hero 25507	Percheron
6176	W. C. Willard	Fort Madison	Pedro [illegible]	Percheron
6199	Hilpert & Wright	Keokuk	Combination 19710	French Draft
6200	Chas. Blacksmith	West Point	Bedford 19712	French Draft
6214	Harry W. Peel	Wever	Coquette [illegible]	Percheron
6220	Seth Cook	Mt. Hamil	Garnet Lee [illegible]	Trotter
5242	Seth Cook	Mt. Hamil	Garnet's Honor 47496	Trotter
6227	Stephen Holtkamp	Pilot Grove	Russel Sirius [illegible]	Trotter
5272	Hilpert & Wright	Montrose	Royal Nutpicker 45235	Trotter
6278	B. L. Vincent	West Point	Carlo 17552	French Draft

LINN COUNTY.

5333	E. J. Brown	Center Point	Jasper E. 35910	Trotter
5384	Mrs. Thos Kirk	Center Point	Mantor 59536	Percheron
5362	N. H. Stockey	Palo	Gamaleon 52451 (70346)	Percheron
5749	Kvetensky & Novak	Fairfax	Polydore 4040 (Vol. 17)	Belgian
711	J. S. Conley, Jr.	Cedar Rapids	Keota Talbert 33452	Percheron
5854	C. H. Eastlack	Lisbon	Absent 63845 (63466)	Percheron
5864	W. L. DeClow	Cedar Rapids	Meuty 4654 (28340)	Belgian
5865	W. L. DeClow	Cedar Rapids	Neron du Kat 4655 (2222)	Belgian
5950	W. W. Reece	Coggon	Munger 47343	Percheron
5079	Ondler & Hinton	Coggon	Francouer 48491 (62869)	Percheron
2764	G. C. Murphy	Walker	Berenice 46035 (60385)	Percheron
5909	Henry Lefebure	Fairfax	Gavroche 65885 (72315)	Percheron

LINN COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5275	E. H. Knickerbocker	Fairfax	Bolivar 56547	Percheron
880	C. A. Rishon	Troy Mills	Rameur 22900 (41803)	Percheron
6075	Wm. Crosby	Prairieburg	Bartell 19930	Clydesdale
6076	Wm. Crosby	Prairieburg	Pandur 1720	German Coach
2257	J. H. Wilkins	Cedar Rapids	Tomtom (6825)	French Draft
[illegible]	S. P. Smith	Cedar Rapids	Fuschia 32649 (43339)	Percheron
5648	F. B. Pierpont	Springville	Honneur 52769 (74861)	Percheron
[illegible]	C. H. Eastlack	Lisbon	Winton Duke 8250	Shire
512	V. E. Tear	Central City	Mahomet King 7272	Shire
[illegible]	Henry Lefebure	Fairfax	Ely Cadet 1105 (10517)	Hackney

LOUISA COUNTY.

[illegible]	S. C. Foster	Columbus Jct.	Dick Crockett Jr. 50404	Trotter
[illegible]	Trites & Spitznogle	Oakville	Anneau d'Or 2646 ([illegible])	Belgian
[illegible]	Chas. J. Dyche	Columbus Jct.	Comet VII 9588	Shire
5370	D. H. Westbrook	Letts	Comet 48256	Percheron
[illegible]	L. E. Parsons	Letts	Honni 24549 (44679)	Percheron
[illegible]	C. E. Latta	Columbus Jct.	Bismarck [illegible]	Percheron
5805	C. A. Blanchard	Wapello	March Baronet 10798 ([illegible])	Percheron
[illegible]	L. Ogier	Morning Sun	Nornea Champion 10739 ([illegible])	Shire
[illegible]	J. G. Stafford	Morning Sun	Hibou 60839 (75969)	Percheron
6103	Will Dean	Columbus Jct.	Independent 22849	Percheron
[illegible]	W. R. McCormac	Columbus Jct.	Cap Sheaf II 43245	Percheron

LUCAS COUNTY.

5363	Frank L. Trout	Derby	Daniel 2825 (36820)	Belgian
[illegible]	Frank L. Trout	Derby	Robert 2837 (43822)	Belgian
5476	Wiley & Miller	Lucas	Bruce Champion 13173	Clydesdale
5477	Wiley & Miller	Lucas	Proud King 54737	Percheron
2363	Geo. Piersbacher	Chariton	James 1600	French Draft
[illegible]	A. J. Odenbaugh	Lucas	Ontario Champion 13758	Clydesdale

LYON COUNTY.

5383	John Leonard	Rock Rapids	Norman 59535	Percheron

MADISON COUNTY.

5994	J. Y. McGinnis	St. Charles	Perkins 10433	Shire
5995	J. Y. McGinnis	St. Charles	Major 18624	French Draft
5996	J. Y. McGinnis	St. Charles	Brillianteen 18623	French Draft
5368	Orville Griswold	Patterson	Prince Albert II 17109	French Draft
6046	Bennet Bros.	Earlham	Lambert 11217	Shire
6080	W. S. Hildebrand	Winterset	Humbart 62124 (75800)	Percheron
6081	W. S. Hildebrand	Winterset	Maringot 64115 (66329)	Percheron
3619	M. W. Milleson	Winterset	Vanuea 31435 (46653)	Percheron
3620	M. W. Milleson	Winterset	Malicieux 30592 (48759)	Percheron

MAHASKA COUNTY.

5334	Joe R. Moore	Barnes City	Knottingly Marquis 10375 (24363)	Belgian
5367	E. J. Heisel	Fremont	Mahaska Joe 18367	French Draft

MAHASKA COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5015	John Monlneyx	Fremont	Givet 56776 (71963)	Percheron
5442	I. M. Reed	Rose Hill	Bedworth R. [illegible]	Trotter
5488	H. L. Stringfellow	Oskaloosa	Oskaloosa King [illegible]	Trotter
5629	J. Hill Barnes	Oskaloosa	Hervola [illegible]	Trotter
5628	J. Hill Barnes	Oskaloosa	King Highlander 2743	Saddle Horse
5630	J. Hill Barnes	Oskaloosa	Oranegux Prince 5531	Percheron
5631	J. Hill Barnes	Oskaloosa	Coco 61717	Percheron
5632	J. Hill Barnes	Oskaloosa	Bambin 61718	Percheron
5633	J. Hill Barnes	Oskaloosa	Oranegux Prince 5531	Percheron
5634	J. Hill Barnes	Oskaloosa	Ben Jean [illegible]	Percheron
5536	J. Hill Barnes	Oskaloosa	Admiral [illegible]	Percheron
5537	J. Hill Barnes	Oskaloosa	Major [illegible]	Percheron
5538	J. Hill Barnes	Oskaloosa	[illegible]	Percheron
5734	R. H. Barnes	Leighton	Everett [illegible]	Percheron
5733	R. H. Barnes	Leighton	Orlando [illegible]	Percheron
5763	R. H. Barnes	Leighton	Massanet [illegible]	Percheron
5764	R. H. Barnes	Leighton	Galvanisme 57612 (70140)	Percheron
5765	R. H. Barnes	Leighton	[illegible]	Percheron
5858	I. N. Taylor	Oskaloosa	Victor 16113	French Draft
5859	I. N. Taylor	Oskaloosa	[illegible]	Trotter
4586	John Dykstra	Oskaloosa	Brilliant 54635	Percheron
6128	Everett Plate	Oskaloosa	[illegible]	Percheron
6129	Everett Plate	Oskaloosa	Jackson 16110	French Draft
6130	Ver Ploeg Bros	Leighton	[illegible]	Percheron
30	Phillips & Busby	New Sharon	Philibert [illegible] ([illegible])	Percheron
6286	J. C. Redman	Leighton	Dictator [illegible]	French Draft
6287	J. C. Redman	Leighton	Junius 62117	Percheron
6288	J. C. Redman	Leighton	Harting [illegible] ([illegible])	Percheron
6318	P. J. Ellsworth	Oskaloosa	Norval Worth [illegible]	Trotter

MARION COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1522	James McDonald	Knoxville	Cyclone 15655 (24031)	Percheron
5546	C. L. Hardman	Knoxville	[illegible]	Percheron
5782	C. L. Hardman	Knoxville	Kleber [illegible]	Belgian
4400	Luke L. Schakel	Pella	Pella Pride [illegible]	Clydesdale
5757	E. B. McCoy	Knoxville	Sidney Earl 50133	Trotter
5819	C. L. Hardman	Knoxville	Baccara 62275 (65797)	Percheron
2023	Percheron Horse Co.	Pella	Taupier 43736 (61059)	Percheron
6118	C. VanZante	Pella	Galion [illegible]	Percheron
6151	Lewis Agan	Columbia	Ingomar 9521	Shire
3664	Carl Bruere	Bussey	Reve d' Or Wanegem [illegible]	Belgian
6279	Reese Harman	Knoxville	Gatin 50312	Trotter
6310	W. H. Maasdam	Pella	Garola 62365 (70123)	Percheron
6311	W. H. Maasdam	Pella	Hong Kong 60533 (77831)	Percheron

MARSHALL COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5404	Walter E. Snelling	Clemons	Erin McGregor 40075	Trotter
5406	Edna W. Bennett	Marshalltown	Granite Grattan 45335	Trotter
5505	Lewis Bros.	Marshalltown	Voyageur 18503	French Draft
5839	Henry Weber	Marshalltown	Pacha d' Oha 3645 (44794)	Belgian
5840	Henry Weber	Marshalltown	Singeur 61935 (66756)	Percheron
5841	Henry Weber	Marshalltown	Lablache 55631 (68289)	Percheron
5842	Henry Weber	Marshalltown	Eulenspeigel 4001	German Coach
5984	Lewis Halter	Melbourne	Scottish Laird 12470	Clydesdale
5610	Minerva Percheron Horse Co.	Minerva	Gabon 52706 (70762)	Percheron

MILLS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5704	R. O. Jackson	Glenwood	Blanche II 51613	Percheron

MITCHELL COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5416	A. Bridges	Riceville	Earl Colbert 36852	Trotter
[illegible]	Matt Klechner	Orchard	Bayard de Tooz (29730)	Belgian
[illegible]	M. Bailiff	Osage	Royal Marksman [illegible]	Clydesdale
[illegible]	Adam Johnston	Riceville	Early Reaper Jr. 01327	Trotter
[illegible]	Stephen T. Boyle	Riceville	[illegible] 4033 (52130)	Belgian
[illegible]	R. Dorsey	Osage	[illegible]	Percheron
[illegible]	Loney & Usher	Osage	Wildwood's Ideal 1530	Belgian

MONONA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	James H. Hall	Whiting	Rudolph [illegible]	Percheron
[illegible]	John Mathys	Onawa	Togo [illegible]	Percheron
[illegible]	Button Bros.	Soldier	Demosthene [illegible] (62215)	Percheron
[illegible]	J. J. Thoreson	Soldier	Cartouche 35811	Percheron
[illegible]	Casper Amundson	Soldier	Ethan Allen [illegible]	Percheron
[illegible]	Anton Hanson	Soldier	[illegible]	Percheron
[illegible]	Chas. M. Tuttle	Onawa	Hulot [illegible]	Percheron
[illegible]	Mathys Bros	Onawa	Marley II 55512	Percheron

MONTGOMERY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	W. S. [illegible]	Elliott	Elkan [illegible]	German Coach
[illegible]	J. C. Edwards	Villisca	Bijour 43066	Percheron
5820	J. H. Thompson, Jr.	Elliott	Creston Archie Jr. 11184	Shire
5821	J. H. Thompson, Jr.	Elliott	Scarcliffe President [illegible]	Shire
5896	D. C. Tedrick	Mt. Ayr	Hautain [illegible]	Percheron
4950	H. H. Farlin	Villisca	Gray Voltaire [illegible]	Percheron
5843	John P. Warne	Villisca	Haitan [illegible]	Percheron
6117	Farmers' Horse Co.	Stanton	Grivois [illegible] (71172)	Percheron
[illegible]	J. A. Spears	Red Oak	Chester Gamaleon 57453	Trotter
[illegible]	Imrie Bros.	Red Oak	Expense Jr. 48116	Trotter

MUSCATINE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5440	Brown & Shannon	Nichols	Heckington Rosewood 10381 (26287)	Shire
5495	F. W. Dickey	West Liberty	Lord Dixon 44625	Trotter
545	D. W. Kimberly	Atalissa	Maple Dick 12917 63753	French Draft and Percheron
6011	F. A. Forbes	Conesville	Heritier [illegible]	Percheron
6100	Dippel & Davis	Muscatine	Hay [illegible]	Percheron
6187	Nicholas Stamm	Muscatine	Horace [illegible]	Percheron
6077	U. E. Lodge	West Liberty	Model Dyke [illegible]	French Draft
[illegible]	Nicholas Stamm	Muscatine	Marathon [illegible]	Percheron
6325	Geo. T. Toyne	Muscatine	Keota Sentinel 21686	Percheron

O'BRIEN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	Henry and Theodore Popp	Hartley	Captain George [illegible]	Shire
3325	Chas. B. Sherrill	Paullina	Ergo	Oldenburg Coach

O'BRIEN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5433	J. D. Kloppenberg, Jr.	Hartley	Melor [illegible]	French Draft
1624	Ed. Albright	Hartley	[illegible]	Trotter
5016	Young & Hagen	Paullina	Solimon Junior [illegible]	Percheron
5835	Sullivan Bros.	Sanborn	Nicholas [illegible]	Percheron
5882	Wm. Hagen	Paullina	Anteil [illegible]	Percheron
[illegible]	C. B. & L. F. Sherrill	Paullina	Cardien [illegible]	Percheron
5964	N. I. Hughes	Paullina	Eclypse [illegible]	Percheron
5965	N. I. Hughes	Paullina	Dalo [illegible]	Percheron
1623	H. G. Lyle	Primghar	Rodney Rex 43475	Trotter
6065	D. R. Carmichael	Primghar	Royal Netherfield 14672	Clydesdale
6095	P. J. Baddte	Sheldon	Wellswood Prince [illegible]	Clydesdale
[illegible]	J. R. Prendergast	Sanborn	James J. Jeffries 66981	Percheron
6170	Edo Peters	Sanborn	[illegible]	Percheron
6336	J. D. Kloppenberg, Jr.	Hartley	Scarcliffe Clement [illegible]	Shire
4306	Klopenberg & Kock	Hartley	Vincenzo [illegible]	Percheron

OSCEOLA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5961	H. D. Glade	Ocheyedan	Lavoirsier 16327	French Draft
6252	H. A. Weimer	Harris	Ronald 17246	French Draft
2325	H. A. Weimer	Harris	[illegible]	Percheron

PAGE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5373	Harry W. Thrall	Braddyville	[illegible] Junior [illegible]	Trotter
5402	J. O. James	Braddyville	Morchamp [illegible]	Percheron
2931	State Line Horse Co.	Blanchard	Sully Jr. [illegible]	Percheron
5494	A. G. Thurman	Blanchard	Red Bay Chief [illegible]	Saddle Horse
1739	R. J. Hawthorne	Shenandoah	Lapon [illegible]	Percheron
5755	Sam Pitman	Clarinda	Jougleur [illegible]	Percheron
5785	Ramsey Malone	Oakley	Balmedie Prince [illegible]	Clydesdale
5786	J. M. Bryson	Hawleyville	Gambier [illegible]	Percheron
5848	John Manifold	Shenandoah	[illegible]	Percheron
5896	Veak & Anderson	Essex	Brilliant II [illegible]	Belgian
5897	Veak & Anderson	Essex	Friquet [illegible]	Percheron
5916	F. P. Barr	Clarinda	Tricotteur II 19516	French Draft
5932	T. C. & E. H. Wagaman	Hepburn	Mazarin [illegible]	Percheron
6099	W. E. McKee	Braddyville	Royal Jim 9459	Shire
6219	John H. Kendall	Clarinda	Southgate Marmion 6524 (15859)	Shire

PALO ALTO COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
262	Jonas Mantz	West Bend	Sans Souci 28972 (44260)	Percheron
4276	Harold Baringer	Ruthven	Harquis 51326	Percheron
5814	Jonas Mantz	West Bend	Meunier 34324	Percheron
5852	Lawman & McKoewn	Rodman	Captain Orient 52791	Percheron
226	Wm. Suttle	Curlew	Wenona Regent 22564	Percheron
3347	T. H. Dickey	Emmetsburg	Keota Champion 20226	Percheron

PLYMOUTH COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5856	John Bainbridge	Kingsley	Leon 47207	Percheron
3007	Gearhart Smith	Remsen	Gold Bug 21127	Percheron

POCAHONTAS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5879	J. B. Sheperd	Rolfe	The Little Jap 43727	Trotter
5900	H. C. Ellis	Laurens	Timothy Hay 45301	Trotter
4925	James Glieden	Fonda	Prince 17056	French Draft
5793	Cal Saylor	Palmer	Hussard 5524 (76596)	Percheron
1067	M. T. Blessing	Rolfe	General Sherman 27897	Percheron

POLK COUNTY.

5330	L. T. Waters	Des Moines	Baron Pride 54719	Percheron
5331	L. T. Waters	Des Moines	Pearl Pride 55398	Percheron
5360	George Kopf	Farrar	Plunger [illegible]	Percheron
5421	C. R. McAdoo	Runnells	Old Gold 50252	Fercheron
5422	C. R. McAdoo	Runnells	Ashwell M. P. 9313 ([illegible])	Shire
5420	C. R. McAdoo	Runnells	Rottin 54415 (67629)	Percheron
5449	C. Y. Clement	Des Moines	Constantino 41794	Trotter
5503	F. G. Thornton	Altoona	Extreme 9347	Trotter
5622	Chas. Irvine	Ankeny	Hullin 59424 (74629)	Percheron
5751	J. E. Hall	Avon	Togo 45529	Percheron
5736	Chas. Irvine	Ankeny	Pet de Nove 3958 (Vol. 16)	Belgian
5761	Harry J. Rigg	Des Moines	Martin [illegible] (52240)	Belgian
2487	Arthur Hall	Ankeny	Udell 2280	Trotter
5884	J. H. Warren	Grimes	Cognac de Liroux 4083 (45858)	Belgian
6031	T. J. Shaw	Mitchellville	Hamecon 61457 (74614)	Percheron
6069	Stuart, Keyte & Stuart	Des Moines	Indianola King 59049	Trotter
6074	F. Berkey	Ankeny	Perfection 54441	Percheron
6086	T. J. Shaw	Mitchellville	King Gregory 47963	Trotter
1317	Frank Parmenter	Grimes	Tampon 25702 (45561)	Percheron
6405	G. W. Smith	Altoona	Boro Pioneer 10440 (24083)	Shire

POTTAWATTAMIE COUNTY.

5357	Adam Haun	Loveland	Delagrand 40739	Percheron
5409	Fred Poffenbarger	Council Bluffs	Baron Allerton 31811	Trotter
2580	Wm. Casson	Neola	Porto 2138 (Vol. 12)	Belgian
5424	M. C. Robinson	Avoca	Milton de Wet 43559	Trotter
5475	Twin City Horse Breeding Co.	Council Bluffs	Vartorie 2659	French Coach
5189	John R. Maynes	Macedonia	Folridor 42415 (68356)	Percheron
1130	George Galoway	Macedonia	Haresfield Warrior 7010 (21484)	Shire
5860	Alex L. Stuart	Walnut	Ray Vicent 11018	Shire
771	W. F. Moller	Walnut	Bonny Ton II 6828 (18744)	Shire
6041	H. E. Everson	Carson	Champignol 65701 (65730)	Percheron
2534	Henry Chapman	Oakland	Romeo (48568)	Percheron
897	Lew Brown	Avoca	Bishop Jr. 28195	Trotter
6084	Alex Calder	Loveland	Christopher of Odebolt 13576	Clydesdale
6217	E. T. Waterman	Council Bluffs	Haras 6776 (76192)	Percheron
6218	E. Morrison	Neola	Saturn 3069	German Coach

POWESHIEK COUNTY.

1772	H. P. Roth	Guernsey	Fred E. White 33358	Trotter
5547	A. E. Anger	Brooklyn	Count Royal 43585	Trotter
5758	W. E. Butts	Brooklyn	Bay Sen 42726	Trotter
5889	Chas. A. Schultz	Grinnell	Banker 7297	Shire
6024	R. B. Cranston	Deep River	Scotch Lad 12718	Clydesdale
6035	J. M. Porter	Ewart	Festival 51206 (58868)	Percheron

POWESAIEK COUNTY—CONTINUED

No.	Name of Owner	Postoffice	Name of Stallion	Breed
6050	Schultz & Sherwood	Hartwick	Gredin 4314 (71314)	Percheron
6088	Thompson Miller	Brooklyn	Bernard de Graux 4236 ([illegible])	Belgian
2537	Carter & Dixon	Brooklyn	Mazeppa [illegible]	Percheron
6156	Jonas Secor	Deep River	Longworth [illegible]	Percheron
6172	E. H. Bowman	Brooklyn	Montmiral [illegible]	Percheron
634	T. H. Waters	Grinnell	Regional [illegible] ([illegible])	Percheron
6270	Ira B. Kinyon	Malcom	Keota Palmer 49123	Percheron

RINGGOLD COUNTY.

3536	Mac Clements & Son	Mt. Ayr	Iowa King [illegible]	Trotter
5436	L. D. Norris	Redding	[illegible]	French Coach
5437	L. D. Norris	Redding	[illegible]	Percheron
5551	E. F. Freeman	Tingley	Tingley's Prince 10699	Shire
4457	D. L. Parkins	Clearfield	Black Joe [illegible]	Percheron
5818	Wm. Tapp	Tingley	[illegible]	Percheron
846	J. I. & A. W. Dennin	Maloy	[illegible]	Percheron
6180	E. R. Pine	Diagonal	Boro Steward [illegible] ([illegible])	Shire
6309	A. K. Chandler	Kellerton	Triumph [illegible]	Percheron
6328	Homey Healey	Diagonal	Clyde [illegible]	Clydesdale
6332	Geo. Archer	Ellston	Sam S. Patch 41330	Trotter
6334	G. E. Prentiss	Maloy	Godan 53102 (72389)	Percheron

SAC COUNTY.

5555	Donald McCorkindale	Odebolt	Christopher of Wall Lake [illegible]	Clydesdale
5623	J. W. DeSart	Auburn	Scott [illegible]	Percheron
2100	F. W. Rogers	Sac City	Moliere 24460 (43666)	Percheron
5899	Frank E. Briggs	Sac City	Baron Alltell 43333	Trotter
6033	J. B. Williamson	Auburn	Mascaron 34192 (51911)	Percheron
6143	John Currie	Odebolt	Prince Edward III 9571	Shire
6144	J. P. Gosch	Odebolt	Grillon Jr. 48853	Percheron
6145	Carnavon Draft Horse Co.	Odebolt	Grillon 49804 (57338)	Percheron
6182	Garnatz & Brooks	Auburn	Ford Constantine 01331	Trotter
5541	Chas. Schultz	Lake View	Paysan 4007 (52226)	Belgian

SCOTT COUNTY.

5412	Albert Tullis	Davenport	Doctor Sheldon [illegible]	Trotter
6204	Donahue Percheron Horse Co.	Donahue	Galhauban 42752 (72288)	Percheron

SHELBY COUNTY.

2585	H. W. Schram & Co.	Earling	Byrondale [illegible]	Percheron
4272	O. A. Kilpatrick	Harlan	Buffalo Bill [illegible] (37402)	Belgian
2942	P. F. Manuel	Corley	Crandee 23213	Percheron
6174	W. F. Kilpatrick	Harlan	Babingly Premier 10592 (24909)	Shire

SIOUX COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	Peter Heemink	Rock Valley	Quimper 36884	Trotter
[illegible]	F. J. Heisig	Rock Valley	Torpilleur 42832 (59260)	Percheron
5775	Peter & Theo. Kack	Hospers	Bourgogne de Marbisoux 4257 (Vol. 16)	Belgian
[illegible]	Nick Greenheide	Alton	Celestin [illegible] (45772)	Percheron
5878	E. Brenklander	Orange City	[illegible]	Percheron
[illegible]	Myron Mason	[illegible]	Congo Belge [illegible]	Belgian

STORY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5388	T. J. Pollock	Zearing	Aegon [illegible]	Trotter
5389	T. J. Pollock	Zearing	Prince Allerton 29546	Trotter
5390	T. J. Pollock	Zearing	[illegible] Wilkes [illegible]	Trotter
[illegible]	Ralph Morse	Nevada	Babe [illegible]	French Draft
[illegible]	T. J. Pollock	Zearing	Senator A. 12128	Percheron
[illegible]	H. C. Lowrey	Nevada	Idalgo [illegible]	Percheron
5711	H. C. Lowrey	Nevada	Weymouth [illegible]	Percheron
5759	J. A. Taylor	Ames	Crescent [illegible]	Percheron
5760	J. A. Taylor	Ames	Ventrose 1881	French Draft
5762	K. P. Teig	Roland	Prince Edward 1788	French Draft
[illegible]	M. J. Nelson	Cambridge	Guy Lussac 61947 (69946)	Percheron
5921	E. J. & M. D. Brouhard	Colo	Vanline 47116	Trotter
5922	E. J. & M. D. Brouhard	Colo	Hop 64829 (75780)	Percheron
194	Lars C. Olson	Nevada	Jam's Plunger 22470 9067	Percheron French Draft
6078	Anthony Picht	Colo	Halo [illegible]	Percheron
6183	Iowa State College	Ames	Advance Guard 45938	Trotter
6184	Iowa State College	Ames	Hongreur [illegible] (77417)	Percheron
6185	Iowa State College	Ames	Littleworth Marmion 10463 (26384)	Shire
6269	Moran & McConnell	Nevada	Huis [illegible]	Percheron
4961	T. O. Savin	Roland	Garant 42820 [illegible]	Percheron

TAMA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3556	T. G. & W. A. Graham	Chelsea	Invador 41729	Trotter
1520	O. H. Morford	Chelsea	Silver King [illegible]	Percheron
5385	F. L. Audley	Chelsea	Colonel Gentleman 23944	Percheron
5500	Hildebrand Bros.	Gladbrook	Baron Cawdor 13802 (13795)	Clydesdale
5769	Bacon & Clough	Traer	Darius [illegible]	Percheron
799	E. C. Norris	Tama	Iowa Champion 7283	Shire
31	Peterman & Dobson	Garwin	T. H. H. 38691	Trotter
5979	C. B. Loder	Toledo	Andes 19443	French Draft
4981	Jesse M. Blake	Toledo	Mercury [illegible]	French Coach
6072	James Morgan	Traer	King [illegible]	Clydesdale
3283	O. H. Morford	Chelsea	Kirkland King 12226	Clydesdale
6268	James Morgan	Traer	Stately Prince [illegible]	Clydesdale

TAYLOR COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5372	Gordon & Richard	Lenox	Mouton de Waterloo 3814 (Vol. 15)	Belgian
5417	Gordon & Richard	Lenox	Radius 52053 (65823)	Percheron
5391	J. T. Dunlap	Lenox	Waldersley Commodore [illegible] (25738)	Shire
5426	W. T. Margerum	Lenox	Hareng [illegible]	Percheron
5444	L. E. Safely	Bedford	Silver 3663 (Vol. 15)	Belgian
5450	W. J. Marr	Bedford	Powerful [illegible]	Percheron

TAYLOR COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3935	W. M. Hamilton	Lenox	Mac Cloy Jr. [illegible]	Clydesdale
5502	Jesse Hughes	New Market	Lord George 18601	French Draft
5554	L. L. O'Dell	Gravity	Governor [illegible]	French Draft
5745	Wakeman & Beck	Bedford	Moulton Willington 10708 (26485)	Shire
5756	E. E. Leighton	New Market	[illegible]	Percheron
4170	J. H. Keith	Bedford	William McKinley [illegible]	Percheron
[illegible]	E. M. Patton	Clearfield	[illegible]	Percheron
[illegible]	Heath, Leach & Coulthard	Lenox	Brilliant 1372	Belgian
[illegible]	E. T. Philpott	Lenox	Brilliant [illegible]	Percheron
[illegible]	I. H. Cade	Lenox	[illegible]	Percheron
[illegible]	Oliver [illegible]	Conway	[illegible]	Percheron
[illegible]	L. E. [illegible]	Gravity	[illegible]	French Draft
[illegible]	Abe Miller	Bedford	[illegible]	Percheron
[illegible]	John J. Knox	Clearfield	[illegible]	Percheron
[illegible]	Wm. [illegible]	Lenox	[illegible]	Clydesdale
1801	Earl Proctor	Lenox	[illegible]	Clydesdale
[illegible]	Earl Proctor	Lenox	[illegible]	Trotter
493	L. W. Ross	Gravity	[illegible]	French Draft
[illegible]	Thos. Symonds	Lenox	Lieutenant 25514	Percheron
6155	M. L. McManus	Lenox	Dignity Prince 11280	Shire
[illegible]	J. F. Porter	Lenox	Motus Jr. 57079	Percheron
[illegible]	C. D. Ragon	Clearfield	[illegible]	Trotter
[illegible]	Meredity & Son	Gravity	Milo 4541 (52446)	Belgian
[illegible]	H. M. Long	Bedford	[illegible]	Percheron
[illegible]	James Lininger	Lenox	[illegible]	Belgian

UNION COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	Geo. W. Bilbo	Creston	[illegible]	Percheron
[illegible]	Geo. Leech	Afton	[illegible]	Percheron
1053	A. L. Otis	Afton	Romulus [illegible]	Percheron
[illegible]	Bilbo & VanPatten	Creston	Black Diamond 59644	Percheron
5756	Geo. W. Bilbo	Creston	[illegible]	Percheron
[illegible]	Geo. W. Bilbo	Creston	[illegible]	Percheron
5768	Geo. W. Bilbo	Creston	[illegible]	Percheron
[illegible]	A. Latimer Wilson	Creston	[illegible]	Percheron
5787	T. A. Stevenson	Shannon City	Wise Man's Choice 10245	Shire
[illegible]	N. D. Merrill	Creston	[illegible]	Percheron
[illegible]	Geo. W. Bilbo	Creston	[illegible]	Percheron
[illegible]	Geo. W. Bilbo	Creston	Felin 64746 (68364)	Percheron
[illegible]	Geo. W. Bilbo	Creston	[illegible]	Shire
[illegible]	Geo. W. Bilbo	Creston	[illegible]	Percheron
[illegible]	Geo. W. Bilbo	Creston	[illegible]	French Draft
5853	Suffolk Horse Co.	Shannon City	Ashmore Minstrel 400 [illegible]	Suffolk
[illegible]	W. R. Steele	Kent	[illegible]	Percheron
[illegible]	Geo. W. Bilbo	Creston	[illegible]	French Draft
5957	Geo. W. Bilbo	Creston	[illegible]	French Draft
[illegible]	Geo. W. Bilbo	Creston	[illegible]	French Draft
[illegible]	H. A. Wessels	Cromwell	[illegible]	Belgian
[illegible]	Geo. W. Bilbo	Creston	[illegible]	Percheron
[illegible]	Geo. W. Bilbo	Creston	[illegible]	Shire
[illegible]	L. L. Stoner	Lorimor	[illegible]	Belgian
[illegible]	Geo. W. Bilbo	Creston	Prosper [illegible]	French Draft
[illegible]	A. A. Delay	Afton	Vire 29942 (45665)	Percheron
6038	Beeber Bros.	Lorimor	[illegible]	Percheron
6052	A. M. Crawford	Afton	Braque 3764 (Vol. 16)	Belgian
5774	Gus Reetz	Cromwell	Ravenwood II [illegible]	Shire
[illegible]	Gus Reetz	Cromwell	Iowa Prince 4841	[illegible]
6168	W. R. Wilson	Arispe	[illegible]	Percheron
6186	John E. Bowman	Creston	[illegible]	Shire
[illegible]	Geo. W. Bilbo	Creston	Major 52501	Percheron
6261	James Welch	Creston	Milton [illegible] (58570)	Belgian
[illegible]	Wallace & McCann	Creston	Theodore 49709	Percheron
[illegible]	G. F. Reetz	Cromwell	Catterall Admiral 10960 (25051)	Shire

VAN BUREN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5490	Wm. B. Ellis	Keosauqua	Sultan 500 (2640)	Belgian
5491	Wm. B. Ellis	Keosauqua	Riant 25580 (44232)	Percheron
5572	Herman Carter	Farmington	Valentine 52486	Percheron
5609	Thos. O. Burnett	Bonaparte	Hanoi 64117 (74874)	Percheron
5885	Walter McDaniel	Farmington	Honorable 62419 (76267)	Percheron
6140	L. K. Doud & Bro.	Douds Leando	Sam 50693	Percheron
6152	W. C. Strait	Keosauqua	Coquelin 51330	Percheron
6153	W. C. Strait	Keosauqua	Lochinvar II 63032	Percheron
6213	J. O. Boyer	Douds Leando	Buster Brown 19283	French Draft
5631	Tateman & Co.	Milton	Hemi [illegible] (75932)	Percheron

WAPELLO COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5343	J. P. Hawthorne	Farson	Togo [illegible]	Percheron
5344	J. P. Hawthorne	Farson	Angiro 40178	Percheron
5352	Lewis Ruffing	Ottumwa	Defender's Best 11646	Clydesdale
6119	Edwin Barnes	Blakesburg	Hercules 1993	Belgian
6205	Eli Swain	Blakesburg	Ormeau 47086 (62422)	Percheron

WARREN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5428	D. Butterfield	Carlisle	Gray Boy 53910	Percheron
5479	N. L. Elmandorf	Lacona	Canada Champion 13759	Clydesdale
5480	E. A. Keeney	Lacona	Hate Toi 57874 (76702)	Percheron
5548	W. L. Farmer	Indianola	Angelico 60303 (65379)	Percheron
5701	Harry E. Hopper	Indianola	Redlac 40094	Trotter
5776	Harry E. Hopper	Indianola	Pandola 48771	Trotter
5809	Henry S. Westerly	Indianola	Samson 16988	French Draft
5810	W. L. Farmer	Indianola	Helois 64118 (73789)	Percheron
5811	W. L. Farmer	Indianola	Robur 4842 (52204)	Belgian
5812	W. L. Farmer	Indianola	Barbarin 55778 (68088)	Percheron
5813	W. L. Farmer	Indianola	Stuntney Domino 10275 (26859)	Shire
5880	Harry E. Hopper	Indianola	Brissas de Melle 4117 (Vol. 16)	Belgian
5881	Harry E. Hopper	Indianola	Calomel 4119 (Vol. 16)	Belgian
5889	F. O. Nutting & Son	Indianola	Brilliant 53820	Percheron
5890	F. O. Nutting & Son	Indianola	Dewey 53821	Percheron
5891	F. O. Nutting & Son	Indianola	Coco II 18457	French Draft
3471	A. DeMoss	Spring Hill	Roneo de Barnissem 2053 (27248)	Belgian
5972	W. L. Farmer	Indianola	Lion de Vynckt 3362 (37206)	Belgian
6030	Elmer Morris	Indianola	The Lord Mayor II 8168	Shire
4897	Harry E. Hopper	Indianola	Seal Brown 43996	Trotter
6151	E. W. Hall	Indianola	Harry Gordon 30781	Trotter
6169	Henry Bros.	Indianola	Glen Echo 9331	Shire
692	W. T. Sinnard	Carlisle	Rocher 40091 (46406)	Percheron
4594	Keith McCoy	Indianola	Sir Phill 46671	Percheron
6320	W. L. Farmer	Indianola	Gergon 65449 (71996)	Percheron

WASHINGTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5423	V. Beeney	Wellman	Daniel Lee 38639	Trotter
5553	A. F. G. Stice	Washington	Marion 40904 (45670)	Percheron
5550	F. M. Smith	Crawfordsville	Fricoteur 52012 (63402)	Percheron
5552	A. F. G. Stice	Washington	Manager 20490	Trotter
1099	Samuel B. Miller	Kalona	Trojus Jr. 12654	French Draft
3580	A. J. Gingerich	Kalona	Ed Aegon 45139	Trotter
5801	Leeper & Good	Noble	Marital 49901	Percheron

WASHINGTON COUNTY—CONTINUED

Cert No.	Name of Owner	Postoffice	Name of Stallion	Breed
5920	Jos. A. Conrad	Noble	Kermet II [illegible]	Trotter
[illegible]	Jesse McCoy	Crawfordsville	[illegible]	Percheron
6039	S. E. Blaker	Riverside	Gualbert [illegible] ([illegible])	Percheron
[illegible]	S. E. Blaker	Riverside	Royal Lincoln III [illegible] ([illegible])	Shire
6255	R. L. Livingston	Washington	Pazant [illegible]	Trotter
6256	R. L. Livingston	Washington	Hydromel [illegible] ([illegible])	Percheron
[illegible]	R. L. Livingston	Washington	Truman's Premier 21530	Percheron

WAYNE COUNTY.

[illegible]	B. S. Walker	Corydon	Baudoin [illegible] ([illegible])	Percheron
[illegible]	H. E. Lewis	Humeston	[illegible] Foxy [illegible]	Morgan
[illegible]	R. B. Kaster	Corydon	Star Foxy [illegible]	Morgan
[illegible]	G. C. Caldwell	Humeston	Black Diamond [illegible]	French Draft

WEBSTER COUNTY.

5434	Peterson Bros.	Gowrie	Heir of Fame 50106	Trotter
[illegible]	Rude Kimbring	Gowrie	[illegible] Chief [illegible]	Clydesdale
[illegible]	J. I. Rutledge	Fort Dodge	[illegible]	Percheron
6036	Prairie View Draft Horse Co.	Dayton	[illegible]	French Draft

WINNEBAGO COUNTY.

6069	Core Bros.	Forest City	Silver 56343	Percheron
6070	Core Bros.	Forest City	Bankor 56345	Percheron
6071	J. H. Isaacson	Forest City	Victor 50118	Percheron

WINNESHIEK COUNTY.

3357	Thos. Floody	Ossian	Royal King 9779 (10276)	Clydesdale
[illegible]	Rehwinkle & Sons	Calmar	Fanfar de Fooz 4205 ([illegible])	Belgian
[illegible]	F. H. Harms	Calmar	Alphonse 3990 (52222)	Belgian
[illegible]	Bonfig Bros.	Ossian	Cosaque de Seneffe 4025 (40714)	Belgian
[illegible]	A. J. Owen	Jackson Junction	Lorraine 52754	Percheron
6053	Castalia Belgian Horse Co.	Castalia	Baron de Bel Air 4714 ([illegible])	Belgian
[illegible]	Hovden & Boyd	Decorah	Jay Axtellion [illegible]	Trotter
6319	I. D. Ward	Decorah	Will Pay [illegible]	Trotter

WOODBURY COUNTY.

5346	Ben Peterson	Danbury	Grotin 51597 (70991)	Percheron
[illegible]	John T. Pope	Sloan	Bold Corbett [illegible]	Shire
2188	S. T. Swanson	Moville	Ralph II [illegible]	Shire
[illegible]	P. H. Dyment	Sioux City	Fast Wood [illegible]	Trotter
5850	P. H. Dyment	Sioux City	Lee Allerton [illegible]	Trotter
[illegible]	P. H. Dyment	Sioux City	Hal Sterling [illegible]	Trotter
[illegible]	E. V. Ferrin	Pierson	Regulus [illegible] ([illegible])	Percheron
5857	Chas. Bell	Pierson	Barney 47212	Percheron
[illegible]	Frank Nufer	Anthon	Redmoor O. [illegible]	Trotter
[illegible]	J. H. Eberly	Lawton	Hugo [illegible]	Percheron
[illegible]	John Mulhall	Sioux City	Piston [illegible] ([illegible])	Belgian
[illegible]	W. H. Gulliford	Correctionville	Fornham Choir Boy 409 (3472)	Suffolk
3305	A. E. Copenhaver	Bronson	Jupin de Schoonenberg 2045 ([illegible])	Belgian

WORTH COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5342	T. W. Youmans	Northwood	Chief 4719	Morgan
5380	G. N. Haugen	Northwood	Isaac 43025	Percheron
5822	C. H. Walker	Northwood	Stuntney Benedict 1000 (8660)	Hackney
5817	G. F. Overholt	Manly	Merit [illegible]	Percheron
4675	Deer Creek Draft Horse Co.	Northwood	Gacheur 51928 (71175)	Percheron
6179	E. L. Loberg	Northwood	Caruso 50607	Percheron

WRIGHT COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	J. W. Lindsay	Clarion	Laselle [illegible]	Percheron
[illegible]	T. A. Davenport	Belmond	Dick Lynedoch 13491	Clydesdale
5808	Paul Findson	Clarion	Plaisir 52474 (66430)	Percheron
[illegible]	J. H. Penfield	Clarion	[illegible]	Percheron
[illegible]	E. A. Richardson	Goldfield	King Directum [illegible]	Trotter
6097	Kelling Bros.	Goldfield	Prudhomme II 61171	Percheron
6114	Thompson Ross	Galt	Mouton de Qyestenne [illegible]	Belgian
6166	L. W. Cole	Clarion	Joe Bray 48048	Trotter
[illegible]	Oscar Dahlgren	Clarion	Celum [illegible]	Percheron

HORSES OWNED IN NEIGHBORING STATES.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
[illegible]	Gilbert A. Anderson	Spring Grove, Minn.	Sensateur 3190 (16288)	Belgian
[illegible]	Ole K. & Lars Larson	Kenneth, Minn.	Nandis 62070 (67602)	Percheron
5113	Jas. A. Martin	Lancaster, Mo.	Bismark [illegible]	Percheron
[illegible]	Albert Moosman	Moline, Ill.	Red Clarence [illegible]	Trotter
5883	P. W. Reece	Elmore, Minn.	Major de Leers 4580 (47476)	Belgian
115	J. H. & O. C. Mehl	Frost, Minn.	Sans Gene [illegible]	Percheron
4041	Nason Gideon	Ceylon, Minn.	Baron de Sartland 2301 (33270)	Belgian
397	Fred Heidecker	Wallingford	Highland Dandy 22542	Percheron
828	A. L. Halver	LeRoy, Minn.	Black 2221 (29464)	Belgian

PART XIV

Concentrated Commercial Feeding-Stuffs, Condimental Stock Foods, and Agricultural Seeds.

EXPLANATORY NOTES

STOCK FOODS.

(1) Section 3 of the act defines "concentrated commercial feeding stuffs" and includes in the definition "also condimental stock food; patented proprietary or trademarked stock or poultry feeds, claimed to possess medicinal or nutritive properties or both," but the feeds embraced in this part of the definition are treated differntly throughout the law.

(2) Labels required on feeding stuffs. Sections 1 and 2.

	Example—
(a) Number of net pounds in the package.	**100 POUNDS.**
(b) Name or brand of the article.	**MIXED BARLEY FEED.**
(c) Name and address of manufacturer, importer or dealer.	**SMITH & CO.**
(d) Place of manufacture.	**ST. LOUIS.**
(e) Statement of percentages of crude protein, crude fibre, crude fat.	**PROTEIN 14%, FAT 2.5%, FIBER 10%.**
(f) Names of all ingredients.	**BARLEY, ALFALFA, OAT HULLS, CORN.**

(3) Statements required upon condimental stock foods comprise the items (a), (b), (c) and (d) above; also a statement of the name and percentage of the diluents used; for example, such a statement might be:

DILUENTS USED, 40% OIL MEAL, 20% BRAN.

(4) Section 1 provides that the statements required shall be "distinctly printed or written," "in legible type not smaller than eight-point heavy gothic caps," and that it be "a statement" attached "in a conspicuous place." This department will hold that the first two phrases mean that the statement is to be so printed that it may be easily and plainly read; and that the last two phrases mean that the various items required may not be scattered over the package or otherwise disassociated from one another to the extent that the buyer will with difficulty find the information required to be given.

(5) Section 4 requires that each manufacturer shall file with the Food and Dairy Commissioner a certified copy of the statement required to be attached to his feeding stuff, and also a sample of each brand of his concentrated commercial feeding stuffs, together with the proper affidavit.

(6) Upon feeding stuffs other than condimental stock foods an inspection fee of ten cents a ton must be paid and a tag stating that the inspection fee has been paid must be attached to the bags or packages. These tags are to be furnished by the Food and Dairy Commissioner, in accordance with the provisions of Section 5. Blank form for such statements and affidavits will be furnished on request.

(7) Local dealers are liable for the sale of feeding-stuffs not bearing the statements and inspection tag required by the law and should insist that feeding-stuffs sent them for sale be properly labeled and tagged.

(8) This department can not undertake analyses for manufacturers or dealers, but is required to make analyses for those who purchase for their own use, and samples and applications for such analyses should be accompanied by a copy of the statement attached to the feeding stuff. Section 7 requires payment of a fee of one dollar for such analyses.

(9) Tags will be issued in two forms:

(a) Regular shipping tag form.

(b) Gummed back paper form, suitable for attachment to such shipping tags as the manufacturer may be using.

The above forms of tags will be issued in denominations suitable for use with 25, 50 and 100 pounds net. A tag suitable for use with ton lots will also be issued, to be used with sales made direct to the consumer under the proviso found in the last sentence of Section 5.

CONDIMENTAL STOCK FOODS.

The definition of these foods is found in Section 3. A license of $100 a year is required from each manufacturer or importer of such foods, but if this license is not paid by the manufacturer or importer it may be collected from the dealer or agent for such food. Dealers and agents should therefore make sure that the license has been paid by the manufacturer before attempting to sell the same inside this State.

(10) The statement set forth in paragraph (3) is required upon packages of articles of this character. See also paragraphs (4) and (5) preceding.

AGRICULTURAL SEEDS.

The definition of agricultural seeds is found in Section 9 and a list of the seeds affected by this act is found, with percentages of purity and viability, in Section 16.

(11) The sale of agricultural seeds containing any of the weed seeds mentioned in Section 10 is absolutely prohibited, and seedsmen will be held responsible for sale of seeds for seeding purposes which contain any of the mentioned weed seeds.

(12) The sale of agricultural seeds which may contain an aggregate of not more than two per cent by weight of the weed seeds mentioned in Section 11 is not interfered with; but if more than two per cent of such impurities is present, the approximate percentage of each of such seeds must be given in the statement required in Section 1 of the act.

13. Section 12 defines impurities in seeds. Agricultural seeds sold without statement of impurities are thereby guaranteed to be up to the standards of purity and viability established in Section 16. Seeds not up to these standards may be sold only when the statement required in Section 1 includes the name and percentages of impurities mentioned in Section 12.

(14) The statement required upon seeds by Section 1 is as follows:

	Example—
(a) Name of seed.	**CLOVER, RED.**
(b) Name and address of seedsman.	**SMITH & CO., DES MOINES.**
(c) Statement of purity, etc., in accordance with Sections 11 and 12.	**IMPURITIES 3% YELLOW TREFOIL, 7% UNNAMED SEEDS, 12% CLOVER NON-GERMINABLE.**
(d) Place where grown.	**IOWA GROWN.**

(15) This department can not undertake analyses or investigations of seeds for dealers, but is required to make analyses for those who purchase for their own use, and samples and applications for such investigations must be accompanied by a copy of the statement of the seedsman attached to the packages. Section 7 requires payment of a fee of fifty cents.

LAWS

Chapter 189, Thirty-second General Assembly.

Concentrated Commercial Feeding-Stuffs, Condimental Stock Foods, and Agricultural Seeds

EFFECTIVE JULY 4, 1907

Section 1. Every lot in bulk, barrel, bag, pail, parcel or package of concentrated commercial feeding-stuffs as defined in Section Three (3) of this act; and every parcel, package or lot of agricultural seeds as defined in Section Nine (9) of this act, and containing one pound or more, offered or exposed for sale in the State of Iowa, for use within this State, shall have affixed thereto, in a conspicuous place on the outside thereof, distinctly printed in the English language, in legible type not smaller than eight-point heavy gothic caps, or plainly written, a statement certifying:

1. In case of concentrated commercial feeding stuffs:

First. The number of net pounds of feeding stuffs in the package.

Second. The name, brand, or trademark under which the article is sold.

Third. The name and address of the manufacturer, importer, dealer or agent.

Fourth. The place of manufacture.

Fifth. Except in the case of condimental stock food; patented, proprietary or trademarked stock and poultry foods, claimed to possess medicinal or nutritive properties, or both, the chemical analysis of the feeding-stuffs, stating the percentages of crude protein, crude fat, and crude fibre, allowing one per cent of nitrogen to equal six and twenty-five one-hundredths per cent of protein, all three constituents to be determined by the latest methods adopted by the Association of Official Agricultural Chemists of the United States.

2. In the case of agricultural seeds:

First. The name of the seed.

Second. Full name and address of the seedsman, importer, dealer or agent.

Third. A statement of the purity of the seed contained, specifying the kind and percentage of the impurities as defined in Sections Eleven (11) and Twelve (12) hereof, provided that said seeds are below the standards fixed in this act.

Fourth. Locality where said seed was grown, when known.

Sec. 2. Every barrel, bag, pail, parcel or package of concentrated commercial feeding stuffs, as defined in Section Three (3) of this act, and every feed intended for domestic animals that is compounded from two or more substances, in addition to the requirements of Section One (1) shall have affixed thereto, in a conspicuous place on the outside thereof, a statement in the manner and form prescribed in Section One (1), giving the true and correct names of all the ingredients of which it is composed. Except condimental stock food; patented, proprietary or trademarked stock or poultry foods, claimed to possess medicinal or nutritive properties, or both; and these shall be labeled or branded so as not to deceive or mislead the purchaser in any way, and the contents of any such package shall not be substituted in whole or in part for any other contents.

"Any statement, design or device upon the label or package regarding the substances contained therein, shall be true and correct, and any claim made for the feeding, condimental, tonic or medicinal value shall not be false or misleading in any particular.

"The name and percentage of any deleterious or poisonous ingredient or ingredients shall be plainly stated upon the outside of the package or container."

"The name and percentage of the diluent or diluents, or bases, shall be plainly stated on the outside of the package or container."

Sec. 3. The term, concentrated commercial feeding stuffs, as used in this act, shall include alfalfa meals and feeds; dried beet refuse; ground beef or fish scraps; bean meals; dried blood; brewers' grains, both wet and dry; cerealine feeds; cocoanut meals; corn feeds; corn and oat feeds; corn, oat and barley feeds; compounds under the name of corn and cob meals; corn bran; clover meal; cotton-seed meal and feeds; germ feeds; distillers' grains; gluten meals; gluten feeds; hominy feeds; linseed meals; malt refuse; malt sprouts; meat meals; meat and bone meals; mixed feeds of all kinds; oil meals of all kinds; oat feeds; oat bran; oat flour; oat middlings; oat shorts; pea meals; poultry foods; rice bran; rice meal; rice polish; rye bran, rye middlings; rye shorts; starch feeds and starch factory-by-products; tankage and packing-house by-products; wheat bran; wheat middlings; wheat shorts; and low grade wheat flour; and all materials of similar nature used for domestic animals; also condimental stock food; patented, proprietary or trademarked stock or poultry feeds, claimed to possess medicinal or nutritive properties or both; and all other materials intended for feeding to domestic animals. But it shall not include: Hay, straw; whole seeds; unmixed meals made from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat, and broomcorn; nor wheat flours nor other flours fit for human consumption.

Sec. 4. Before any concentrated commercial feeding-stuffs, as defined in Section Three (3) of this act, is offered or exposed for sale, the importer, manufacturer, person or party who causes it to be sold or offered for sale within the State of Iowa, for use within this State, for each and every feeding-stuff bearing a distinguishing name or trademark, shall file with the State Food and Dairy Commissioner a certified copy of the statement named in Section One (1) of this act, and shall also deposit with the said State Food and Dairy Commissioner a sealed glass jar or bottle containing not less than one pound of the feeding-stuff to be sold or offered for sale, accompanied by an affidavit that it is a fair average sample thereof and corresponds within reasonable limits to the feeding-stuff which it represents.

Sec. 5. Before any manufacturer, importer, dealer or agent shall offer or expose for sale in this State any of the concentrated commercial feeding-stuffs defined in Section Three (3) of this act, he shall pay to the State Food and Dairy Commissioner an inspection fee of ten cents per ton for each ton of such concentrated commercial feeding-stuffs sold or offered for sale in the State of Iowa, for use within this State; (except that every manufacturer, importer, dealer or agent for any condimental, patented, proprietary or trademarked stock or poultry foods, or both, shall pay to the State Food and Dairy Commissioner, on or before the fifteenth day of July of each year, a license fee of one hundred dollars ($100.00) in lieu of such inspection fee. Whenever the manufacturer or importer of such foods shall have paid the fee herein required, no other person or agent of such manufacturer or importer shall be required to pay such license fee; and shall affix to each lot shipped in bulk, and to each bag, barrel or package of such concentrated commercial feeding-stuffs, a tag, to be furnished by the said State Food and Dairy Commissioner, stating that all charges specified in this section have been paid; provided, that the inspection fee herein required shall not apply to unadulterated wheat, rye and buckwheat bran, nor wheat, rye and buckwheat middlings, nor to wheat, rye and buckwheat shorts manufactured in this State. The said State Food and Dairy Commissioner is hereby empowered to prescribe the form of such tag and adopt such regulations as may be necessary for the enforcement of this act. Tags for use upon concentrated commercial feeding-stuffs shall be issued in denominations suitable for use with twenty-five, fifty and one hundred pounds net, except as hereinafter provided. Provided, that any dealer who sells at one time to any other person one ton or more of concentrated commercial feeding-stuffs shall be held to have complied with the provisions of this section if he delivers to the purchaser the tax tags herein required, even though they may not be attached to the various packages.

Sec. 6. The State Food and Dairy Commissioner shall cause to be made analyses of all concentrated commercial feeding-stuffs and agricultural seeds sold or offered for sale in this state. Said State Food and Dairy Commissioner is hereby authorized, in person or by deputy, to take for analysis a sample from any lot or package of concentrated commercial feeding-stuffs in this state, not exceeding two pounds in weight; and in case of agricultural seeds, a sample not exceeding four ounces in weight; but said sample shall be drawn or taken in the presence of party or parties in interest, or their representative, and shall be taken from a parcel, lot or number of parcels which shall not be less than five per cent of the whole lot inspected and shall be thoroughly mixed and divided into two samples and placed in glass or metal vessels carefully sealed and a label placed on each, stating the name or brand of the feeding-stuff, agricultural seeds or material sampled, the name of the party from whose stock the sample is drawn, and the date and place of taking such sample, and said label shall be signed by the said State Food and Dairy Commissioner, or his authorized agent; or said sample may be taken in the presence of two disinterested witnesses. One of said duplicate samples shall be left on the premises of the party whose stock was sampled and the other retained by the State Food and Dairy Commissioner, for analysis and comparison with the certified statements required by Sections One (1) and Four (4) of this act. The result of the analysis of the sample, together with additional information, shall be published from time to time in bulletins issued by the State Food and Dairy Commissioner upon approval of the Executive Council.

Sec. 7. Any person purchasing any concentrated commercial feeding-stuffs or agricultural seeds in this State, for his own use, may submit fair samples of said feeding-stuffs or seeds to the State Food and Dairy Commissioner, who, upon receipt of an analysis fee of fifty cents (50c) for each sample of agricultural seeds and one dollar for each sample of concentrated commercial feeding-stuff, shall cause an analysis of the same to be made.

Sec. 8. No person shall sell in ground form, wheat or rye screenings, containing cockle or other poisonous or deleterious substances.

Sec. 9. The term, agricultural seeds, as used in this act, shall include the seeds of the red clover, white clover, alsike clover, alfalfa, Kentucky blue-grass, timothy, brome grass, orchard grass, red top, meadow fescue, oat grass, rye grass and other grasses and forage plants, flax, rape and cereals.

Sec. 10. No person shall sell, offer, or expose for sale, or distribution, in this State, for the purpose of seeding, any of the agricultural seeds as defined in Section Nine (9) of this act, unless the said seeds are free from the seeds of the following weeds: Wild mustard or charlock (Brassica sinapistrum), quack grass (Agropyron repens), Canada thistle (Cnicus arvensis), wild oats (Avena fatua), clover and alfalfa dodder (Cuscuta epithymum), field dodder (Cuscuta arvensis), and corn cockle (Lychnis githago).

Sec. 11. The seeds of the following weeds shall be considered as impurities in the agricultural seeds, as defined in Section Nine (9) of this act, sold, offered, or exposed for sale, within the State for the purpose of seeding: White cockle (Lychnis vespertina), nightflowering catchfly (Silene noctiflora), curled dock (Rumex crispus), smooth dock (Rumex altissimus), sheep sorrel (Rumex acetosella), yellow trefoil (Medicago lupulina), burr clover (Medicago denticulata), sweet clover (Melilotus alba and officianlis), black mustard (Brassica nigra), plantain, buckhorn (Plantago lanceolata), bracted plantain (Plantago aristata), bindweed (Convolvulus sepium), smooth crab grass (Panicum glabrum), common chickweed (Stellaria media). When such impurities or any of them are present in quantity exceeding a total of two per cent of the weight of said agricultural seeds, the approximate percentage of each shall be plainly indicated in statement specified in Section One (1) of this act.

Sec. 12. Sand, dirt, chaff, and foreign substances and seeds other than those specified in Sections Thirteeen (13) and Fourteen (14), or broken seed and seed not capable of germinating, shall be considered impurities when present in agricultural seeds sold, offered, or exposed for sale, in this State, for the purpose of seeding, and when such impurities, or any of them, are present in quantity exceeding the standards of purity and viability authorized in Section Sixteen (16), of this act, the name and approximate percentage of each shall be plainly indicated in the statement specified in Section One (1) of this act.

Sec. 13. For the purposes of this act, seeds shall be deemed to be mixed or adulterated.

First. When orchard grass (Dactylis glomerata) seed contains ten per cent or more by weight of meadow fescue (Festuca elatior pratensis) seed, or Italian rye grass (Lolium italicum), seed, or English rye grass (Lolium perenne) seed.

Second. When blue-grass or Kentucky blue-grass (poa pratensis) seed contains five per cent or more by weight of Canadian blue-grass (Poa compressa) seed, red top chaff, red top (Agrostis alba) seed, or any other seed or foreign substance.

Third. When red clover (Trifolium pratense), mammoth red clover (Trifolium pratense var.), or alfalfa (Medicago sativa), contains five per cent or more by weight of yellow trefoil (Medicago lupulina), or sweet clover (Melilotus alba and M. officinalis) seed or burr clover (Medicago denticulata) seed.

Fourth. When rape (Brassica rapa) contains five per cent or more of common mustard (Brassica sinapistrum) or black mustard (B. nigra).

Sec. 14. For the purposes of this act, seed shall be deemed to be misbranded:

First. When meadow fescue (Festuca elatior pratensis), English rye grass (Lolium perenne) or Italian rye grass (Lolium italicum) is labeled or sold under the name of orchard grass (Dactylis glomerata) seed.

Second. When Canadian blue-grass (Poa compressa) seed, red top (Agrostis alba) seed, or any other seed not blue-grass seed, is sold under the name of Kentucky blue-grass or blue-grass (Poa pratensis) seed.

Third. When yellow trefoil (Medicago lupulina), burr clover (Medicago denticulata), or sweet clover (Melilotus alba) is sold under the name of Clover, June clover, red clover (Trifolium pratense), medium red clover, small red clover, mammoth red clover, sapling clover, pea vine clover (T. pratense var.), or alfalfa (Medicago sativa) seed.

Fourth. When the seeds are not true to the name under which they are sold.

Sec. 15. The provisions concerning agricultural seeds contained in this act shall not apply to:

First. Any person or persons growing or selling seeds for food purposes only, or having such seeds in possession for sale for such purposes.

Second. Any person selling seeds direct to merchants to be cleaned or graded before being offered for sale for the purpose of seeding. This shall not, however, exempt the seller from the restrictions of Section Ten (10) of this act.

Third. Seed that is held in storage for the purpose of being re-cleaned. and which has not been offered, exposed or held in possession of or for sale for the purpose of seeding.

Fourth. Seed marked "not absolutely clean," and held or sold for export outside the State only.

Fifth. The sale of seed that is grown, sold and delivered by any farmer on his own premises for seeding by the purchaser himself, unless the purchaser of said seeds obtains from the seller at the time of the sale thereof a certificate that the said deed is supplied to the purchaser subject to the provisions of this act.

Sixth. Mixtures of seeds for lawn or pasture purposes. This shall not, however, exempt the seller of such mixtures of seeds from the restrictions of Sections Ten (10) and Eleven (11) of this act.

Sec. 16. The following standards of purity (meaning freedom from weed seeds or other seeds), and viability are hereby fixed:

STANDARD OF PURITY AND VIABILITY OF AGRICULTURAL SEEDS.

Name of Seed	Per cent of purity.	Per cent of germinable seeds.
Alfalfa (Medicago sativa)	96	80
Barley	98	90
Blue-grass Canadian (Poa compressa)	90	45
Blue-grass, Kentucky (Poa pratensis)	80	45
Brome, awnless (Bromus inermis)	90	75
Clover, alsike (Trifolium hybridum)	90	75
Buckwheat	96	90
Clover, crimson (Trifolium incarnatum)	98	85
Clover, red (Trifolium pratense)	92	80
Clover, white (Trifolium repens)	90	75
Corn, field (Zea mays)	99	94
Corn, sweet	99	75
Fescue, meadow (Festuca pratensis)	95	85
Flax (Linum usitatissimum)	96	89
Millet, common (Setaria italica)	90	85
Millet, hog (Panicum miliaceum)	90	85
Millet, pearl (Penisetum typhoideum)	99	65
Oats (Avena sativa)	98	96
Oat grass, tall (Arrhena therum avenaceum)	72	70
Orchard grass (Dactylis glomerata)	70	70
Rape (Brassica rapa)	99	90
Red Top (Agrostis alba)	90	70
Rye (Secala cereale)	98	90
Rye grass, perennial (Lolium perenne)	96	90
Rye grass, Italian (Lolium italicum)	95	80
Sorghum (Andropogon sorghum)	96	80
Sorghum, for fodder	90	60
Timothy (Phleum pratense)	96	85
Wheat (Triticum)	98	90

Sec. 17. It is hereby made the duty of the State Food and Dairy Commissioner to enforce the provisions of this act. The inspectors, assistants and chemists appointed by the State Food and Dairy Commissioner shall perform the same duties and have the same authority under this act as are

prescribed by Chapter One Hundred and Sixty-six (166), laws of the Thirty-first General Assembly, and the said State Food and Dairy Commissioner may appoint, with the approval of the Executive Council, such analysts and chemists as may be necessary to carry out the provisions of this act.

Sec. 18. Whoever sells, offers or exposes for sale any of the seeds specified in Sections Thirteen (13) and Fourteen (14) of this act which are mixed, adulterated or misbranded, or any agricultural seeds which do not comply with Sections Ten (10), Eleven (11) and Twelve (12) of this act, or who shall counterfeit or use a counterfeit of any of the tags prescribed by this act; or who shall prevent or attempt to prevent any inspector in the discharge of his duty from collecting samples or who shall violate any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction, shall be fined not more than One Hundred Dollars ($100) and costs of prosecution; provided, that no one shall be convicted for violation of the provisions of Section Ten (10) of this act if he is able to show that the weed seeds named in Section Ten (10) are present in quantities not more than one in ten thousand, and that due diligence has been used to find and remove said seeds.

Sec. 19. There is hereby appropriated, for the purpose of enforcing the provisions of this act, a sum not exceeding three thousand dollars ($3,000) annually. Such expense shall be paid by warrant of the State Auditor upon bills filed by the State Food and Dairy Commissioner with the Executive Council and approved by them. All fees collected under the provisions of this act shall be paid into the State treasury.

PART XV.

Directory of Associations and Organizations Representing Agricultural Interests in Iowa

Iowa Department of Agriculture—President, C. E. Cameron, Alta; Vice-President, W. C. Brown, Clarion; Secretary, J. C. Simpson, Des Moines; Treasurer, G. S. Gilbertson, Des Moines.

Iowa State Horticultural Society—President, William Langham, Cedar Rapids; Vice-President, M. J. Graham, Adel; Secretary, Wesley Greene, Davenport; Treasurer, E. M. Reeves, Waverly.

Iowa Park and Forestry Association—President, Bohumel Shimek, Iowa City; Vice-President, J. S. Ruby, Marshalltown; Secretary, Wesley Greene, Davenport; Treasurer, A. T. Erwin, Ames.

Society of Iowa Florists—President, Chas. N. Page, Des Moines; Vice-President, J. S. Wilson, Des Moines; Secretary, Wesley Greene, Davenport; Treasurer, Peter Lambert, Des Moines.

Western Grain Dealers' Association—President, J. A. Tiedeman, Sioux City; Vice-President, I. E. Jackson, Cedar Rapids; Secretary, Geo. A. Wells, Des Moines; Treasurer, Geo. A. Wells, Des Moines.

Iowa Corn Growers' Association—President, Grant Chapman, Bagley; Vice-President, Geo. M. Allee, Newell; Secretary, M. Bowman, Waterloo; Treasurer, Fred McCulloch, Hartwick.

Corn Belt Meat Producers' Association—President, A. Sykes, Des Moines; Vice-President, J. M. Brockway, Letts; Secretary, H. C. Wallace, Des Moines; Treasurer, Chas. Goodenow, Wall Lake.

Iowa State Highway Commission—Directors, A. Marston and C. F. Curtiss, Ames; Highway Engineer, Thos. H. MacDonald, Ames; Assistant Highway Engineer, C. S. Nichols, Ames; Consulting Bridge Engineer, J. E. Kirkham, Ames; Engineer of Road Machinery, J. B. Davidson, Ames; Secretary, N. M. Beach, Ames.

The Farmers' Grain Dealers' Association—President, B. Hathaway, Kingsley; Secretary, C. G. Messerole, Gowrie; Treasurer, D. D. Paine, Eagle Grove.

Iowa Swine Breeders' Association—President, L. H. Roberts, Paton; Vice-President, H. F. Hoffman, Washta; Secretary, C. C. Carlin, Des Moines; Treasurer, C. C. Carlin, Des Moines.

Iowa State Dairy Association—President, W. B. Barney, Hampton; Vice-President, F. W. Stephenson, Lamont; Secretary, W. B. Johnson, Des Moines; Treasurer, F. L. Odell, Ames.

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES AND FAIR ASSOCIATIONS IN IOWA.

Adair—Adair County Agricultural Society, Greenfield; President, R. M. Adams, Greenfield; Secretary, Fred D. Martin, Greenfield.

Adair—Adair District Fair Association, Adair; President, W. C. Marsh, Adair; Secretary, A. C. Savage, Adair.

Adams—Adams County Agricultural Society, Corning; President, S. M. Richey, Corning; Secretary, Geo. E. Bliss, Corning.

Allamakee—Allamakee County Agricultural Society, Waukon; President, S. H. Opfer, Waukon; Secretary, A. C. Larson, Waukon.

Appanoose—Appanoose County Agricultural Society, Centerville; President, J. A. Bradley, Centerville; Secretary, H. A. Russell, Centerville.

Audubon—Audubon County Agricultural Society, Audubon; President, G. W. Hoover, Audubon; Secretary, S. C. Curtiss, Audubon.

Benton—Benton County Agricultural Society, Vinton; President, W. H. Hanna, Vinton; Secretary, H. G. Kruse, Vinton.

Blackhawk—LaPorte City District Fair Association, LaPorte City; President, James Husman, LaPorte City; Secretary, F. E. Hoyt, LaPorte City.

Bremer—Bremer County Fair Association, Waverly; President, E. C. Bennett, Tripoli; Secretary, D. H. Long, Waverly.

Boone—Boone County Agricultural Society, Ogden; President, F. W. Wilkins, Ogden; Secretary, W. C. Treloar, Ogden.

Boone—Boone Driving Park and Fair Association, Boone; President, J. S. Crooks, Boone; Secretary, A. M. Burnside, Boone.

Buchanan—Buchanan County Agricultural Society, Independence; President, W. M. Woodward, Independence; Secretary, P. G. Freeman, Independence.

Buena Vista—Buena Vista County Agricultural Society, Alta; President, M. Adams; Secretary, C. H. Wegerslev, Alta.

Butler—Butler County Agricultural Society, Allison; President, John Caster, Allison; Secretary, W. C. Shepard, Allison.

Calhoun—Calhoun County Fair Association, Manson; President, Thomas Griffin, Manson; Secretary, C. G. Kaskey, Manson.

Calhoun—Rockwell City Fair Association, Rockwell City; President, Andrew Stewart, Rockwell City; Secretary, A. J. Hunter, Rockwell City.

Cass—Cass County Agricultural Society, Atlantic; President, O. W. Peterson, Atlantic; Secretary, Carl E. Hoffman, Atlantic.

Cass—Massena District Fair Association, Massena; President, S. D. Wyckoff, Massena; Secretary, D. P. Hogan, Massena.

Carroll—Carroll Fair and Driving Park Association, Carroll; President, A. Bedford, Carroll; Secretary, Chas. M. Russell, Carroll.

Cedar—Tipton Fair Association, Tipton; President, P. W. Moffitt, Tipton; Secretary, C. F. Simmermaker, Tipton.

Cerro Gordo—Northern Iowa Agricultural Society, Mason City; President, George H. Purdy, Mason City; Secretary, Charles H. Barber, Mason City.

Chickasaw—Chickasaw County Agricultural Society, New Hampton; President, P. H. Brannon, New Hampton; Secretary, G. M. Bigelow, New Hampton.

Chickasaw—Big Four Fair Association, Nashua; President, W. A. Granger, Nashua; Secretary, C. L. Putney, Nashua.

Clayton—Clayton County Agricultural Society, National; President, Joseph Matt, St. Olaf; Secretary, Henry Luehsen, Garnavillo.

Clayton—Strawberry Point District Agricultural Society, Strawberry Point; President, Parke Taylor, Strawberry Point; Secretary, R. W. Schug, Strawberry Point.

Clayton—Elkader Fair and Track Association, Elkader; President, Henry Koehn, Elkader; Secretary, W. W. Davidson, Elkader.

Clinton—Clinton County Agricultural Society, DeWitt; President, D. Armenstrout, DeWitt; Secretary, G. H. Christensen, DeWitt.

Clinton—Clinton District Agricultural Fine Stock and Fair Association, Clinton; President, John L. Wilson, Almont; Secretary, J. B. Ahrens, Lyons.

Crawford—Crawford County Fair Association, Arion; President, ———, Secretary, A. A. Conrad, Arion.

Davis—Davis County Agricultural Society, Bloomfield; President, W. P. Huffman, Bloomfield; Secretary, H. C. Leach, Bloomfield.

Dickinson—Dickinson County Agricultural Association, Spirit Lake; President, L. E. Francis, Spirit Lake; Secretary, L. Sperbeck, Spirit Lake.

Delaware—Delaware County Agricultural Society, Manchester; President, L. Sly, Manchester; Secretary, T. Wilson, Manchester.

Des Moines—Des Moines County Fair Association, Burlington; President, John B. Hunt, Burlington; Secretary, C. C. Fowler, Burlington.

Emmet—Estherville Agricultural Society, Estherville; President,———; Secretary, A. J. Rhodes, Estherville.

Fayette—Fayette County Agricultural Society, West Union; President, J. S. Smith, West Union; Secretary, E. A. McIlree, West Union.

Fayette—Oelwein District Fair Association, Oelwein; President, Don Ross, Oelwein; Secretary, C. H. Knos, Oelwein.

Floyd—Floyd County Agricultural Society, Charles City; President, W. D. Lindaman, Charles City; Secretary, W. B. Johnson, Charles City.

Franklin—Franklin County Agricultural Society, Hampton; President, J. J. Johnson, Hampton; Secretary, Sherwood A. Clock, Hampton.

Grundy—Grundy County Agricultural Society, Grundy Center; President, H. N. Dilly, Grundy Center; Secretary, L. M. Hawn, Grundy Center.

Guthrie—Guthrie County Agricultural Society, Guthrie Center; President, J. T. Wasson, Panora; Secretary, L. M. Hawn, Guthrie Center.

Hamilton—Hamilton County Fair Association, Webster City; President, F. A. P. Tatham, Webster City; Secretary, Fred Hahne, Webster City.

Hancock—Hancock County Agricultural Society, Britt; President, Dr. E. A. Cooper, Britt; Secretary, F. B. Rogers, Britt.

Hardin—Hardin County Agricultural Society, Eldora; President, J. D. Reed, Eldora; Secretary, H. S. Martin, Eldora.

Harrison—Harrison County Agricultural Society, Missouri Valley; President, Frank Zahner, Modale; Secretary, A. B. Hasbrook, Missouri Valley.

Henry—Henry County Agricultural Society, Mt. Pleasant; President, T. F. Campbell, Mt. Pleasant; Secretary, J. W. Edwards, Mt. Pleasant.

Henry—Winfield Fair Association, Winfield; President, J. A. Baxter, Winfield; Secretary, A. L. Bergsten, Winfield.

Humboldt—Humboldt County Agricultural Society, Humboldt; President, S. H. Grove, Gilmore City; Secretary, E. B. Bravinder, Humboldt.

Iowa—Iowa County Agricultural Society, Marengo; President, Frank Owen, Marengo; Secretary, H. H. Brimmer, Marengo.

Iowa—Victor District Agricultural Society, Victor; President, Charles Raffenspurger, Victor; Secretary, J. P. Bowling, Victor.

Iowa—Williamsburg Pavilion and Fair Association, Williamsburg; President, M. Harrington, Williamsburg; Secretary, Charles Fletcher, Williamsburg.

Jackson—Jackson County Agricultural Society, Maquoketa; President, Wm. Weinke, Maquoketa; Secretary, B. D. Ely, Maquoketa.

Jasper—Jasper County Agricultural Society, Newton; President, C. F. Sauerman, Colfax; Secretary, F. E. Meredith, Newton.

Jefferson—Jefferson County Agricultural Society, Fairfield; President, J. P. Manatrey, Fairfield; Secretary, Charles H. Gage, Fairfield.

Johnson—Johnson County Agricultural Society, Iowa City; President, Bruce Moore, Iowa City; Secretary, George A. Hitchcock, Iowa City.

Jones—Jones County Agricultural Society, Monticello; President, J. E. Bateman, Monticello; Secretary, Fred W. Koop, Monticello.

Jones—Anamosa Fair Association, Anamosa; President, D. Downing, Anamosa; Secretary, Dr. L. W. Russell, Anamosa.

Keokuk—What Cheer District Agricultural Society, What Cheer; President, James Stephenson, What Cheer; Secretary, George A. Poff, What Cheer.

Kossuth—Kossuth County Agricultural Society, Algona; President, J. M. Farley, Whittemore; Secretary, T. P. Harrington, Algona.

Lee—Lee County Agricultural Society, Donnellson; President, T. H. Donnell, Donnellson; Secretary, Chris Haffner, Donnellson.

Lee—West Point District Agricultural Society, West Point; President, E. L. Trevitt, West Point; Secretary, John Walljasper, West Point.

Linn—Wapsie Valley Fair Association, Central City; President, E. M. Lanning, Alburnett; Secretary, E. E. Henderson, Central City.

Linn—Prairie Valley Fair Association, Fairfax; President, H. W. Shank, Fairfax; Secretary, C. J. Knickerbocker, Fairfax.

Linn—Marion Inter-State Fair Association, Marion; President, J. J. Ives, Marion; Secretary, J. B. Travis, Marion.

Louisa—Louisa County Agricultural Society, Wapello; President, S. F. Small, Wapello; Secretary, J. D. Deihl, Wapello.

Louisa—Columbus Junction District Fair Association, Columbus Junction; President, T. J. Klotz, Columbus Junction; Secretary, N. T. Hendrix, Columbus Junction.

Lyon—Lyon County Fair and Agricultural Association, Rock Rapids, President, A. S. Wold, Rock Rapids; Secretary, George H. Watson, Rock Rapids.

Madison—Madison County Agricultural Society, Winterset; President, Elmer Orris, Winterset; Secretary, A. L. Foster, Winterset.

Mahaska—Mahaska County Agricultural Society, Oskaloosa; President, C. B. McCulloch, Oskaloosa; Secretary, J. H. Harrison, Oskaloosa.

Mahaska—New Sharon District Agricultural Society, New Sharon; President, C. G. Tice, Tainter; Secretary, C. F. Momyer, New Sharon.

Marion—Lake Prairie District Agricultural Society, Pella; President, T. D. Tice; Secretary, Charles Porter, Pella.

Marshall—Eden District Agricultural Society, Rhodes; President, A. F. Pike, Rhodes; Secretary, H. M. Weeks, Rhodes.

Marshall—Marshall County Fair Association, Marshalltown; President, J. B. Classen, Green Mountain; Secretary, W. M. Clark, Marshalltown.

Mills—Mills County Agricultural Society, Malvern; President, Sherman Jones, Malvern; Secretary, I. J. Swain, Malvern.

Mitchell—Mitchell County Agricultural Society, Osage; President Richard Dorsey, Osage; Secretary, W. H. Gable, Osage.

Monona—Monona County Fair Association, Onawa; President, M. B. Pullen, Onawa; Secretary, A. W. Burgess, Onawa.

Monroe—Monroe County Agricultural Society, Albia; President, H. S. Berry, Albia; Secretary, J. T. Porter, Albia.

Montgomery—Montgomery County Fair Association, Red Oak; President, D. Dashby, Red Oak; Secretary, W. H. Rathbone, Red Oak.

Muscatine—Union District Agricultural Society, West Liberty; President, J. L. Peters, West Liberty; Secretary, W. H. Shipman, West Liberty.

Muscatine—Wilton Fair Association, Wilton Junction; President, L. N. Ayres, Wilton Junction; Secretary, H. Wildasin, Wilton Junction.

O'Brien—O'Brien County Agricultural Society, Sutherland; President, Otto Peters, Sutherland; Secretary, J. B. Murphy, Sutherland.

O'Brien—Sheldon District Fair Association, Sheldon; President, C. H. Runger, Sheldon; Secretary, John Maus, Sheldon.

Page—Clarinda Fair Association, Clarinda; President, C. E. McDowell, Clarinda; Secretary, J. C. Beckner, Clarinda.

Page—Shenandoah Fair Association, Shenandoah; President, Chas. Aldrich, Shenandoah; Secretary, A. W. Goldberg, Shenandoah.

Palo Alto—Palo Alto County Fair and Racing Association, Emmetsburg; President, W. S. Parnham, Emmetsburg; Secretary, F. H. Wells, Emmetsburg.

Pocahontas—Big Four District Fair Association, Fonda; President, R. F. Beswick, Fonda; Secretary, J. P. Mullen, Fonda.

Pottawattamie—Pottawattamie County Fair Association, Avoca; President, ————; Secretary, C. H. Read, Avoca.

Poweshiek—Poweshiek County Central Agricultural Society, Malcom; President, Wm. McClure, Malcom; Secretary, James Nowak, Malcom.

Poweshiek—Poweshiek County Central Agricultural Society, Grinnell; President, Samuel Jacob, Grinnell; Secretary, C. P. Buswell, Grinnell.

Ringgold—Tingley Fair Association, Tingley; President, C. E. Richardson, Tingley; Secretary, L. F. Hall, Tingley.

Sac—Sac County Agricultural Society, Sac City; President, W. L. Stum, Sac City; Secretary, S. L. Watt, Sac City.

Shelby—Shelby County Agricultural Society, Harlan; President, W. L. Baughn, Harlan; Secretary, Fred Frazier, Harlan.

Sioux—Sioux County Agricultural Society, Orange City; President, A. Vander Meide, Orange City; Secretary, H. Slikkerveer, Orange City.

Sioux—Rock Valley District Fair Association, Rock Valley; President, James Walpole, Rock Valley; Secretary, D. J. Scanlan, Rock Valley.

Story—Story County Agricultural Society, Nevada; President, Dr. W. B. Niles, Ames; Secretary, Bert B. Welty, Nevada.

Tama—Tama County Fair Association, Toledo; President, Isaac Vorhes, Tama; Secretary, A. G. Smith, Toledo.

Taylor—Taylor County Agricultural Society; Bedford; President, G. W. Hook, Bedford; Secretary, R. V. Lucas, Bedford.

Union—Creston District Fair Association, Creston; President, W. D. Merrill, Creston; Secretary, J. M. McCornack, Creston.

Van Buren—Milton District Agricultural Society, Milton; President, F. P. Blanchard, Milton; Secretary, D. A. Miller, Milton.

Wapello—Eldon Big Four Fair Association, Eldon; President, D. A. Jay, Eldon; Secretary, H. R. Baker, Eldon.

Warren—Warren County Fair Association, Indianola; President, Lee Talbott, Indianola; Secretary, Joe McCoy, Indianola.

Wayne—Seymour District Agricultural Society, Seymour; President, L. C. Young, Seymour; Secretary, R. E. Lowry, Seymour.

Winnebago—Forest City Park and Fair Association, Forest City; President, John Wheeler, Forest City; Secretary, C. K. Nelson, Forest City.

Winnebago—Buffalo Center District Fair and Driving Park Association, Buffalo Center; President, F. T. Sparks, Buffalo Center; Secretary, J. P. Boyd, Buffalo Center.

Winneshiek—Winneshiek County Agricultural Society, Decorah; President G. F. Baker, Decorah; Secretary L. L. Cadwell, Decorah.

Worth—Worth County Agricultural Society, Northwood; President, Nels Thorson, Northwood; Secretary, E. H. Miller, Northwood.

Wright—Wright County Agricultural Society, Clarion; President, F. P. Wilson, Clarion; Secretary, Chas. Rotzler, Clarion.

Woodbury—Inter-State Live Stock Fair Association, Sioux City; President, F. L. Eaton, Sioux City; Secretary, Joe Morton, Sioux City.

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Wright—President, F. A. Thayer, Dows, R. F. D.; Secretary, George Sevick, Dows, R. F. D.

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